

SEQUENCE LISTING

<110>Young, James
Kiener, Peter
Osterhaus, Albertus
Fouchier, Ronaldus

<120> METHODS OF TREATING AND PREVENTING RSV, HMPV, AND PIV USING ANTI-RSV,
ANTI-HMPV, AND ANTI-PIV ANTIBODIES

<130> 10271-072-999

<140> To be assigned

<141> Herewith

<150> 60/398,475

<151> 2002-07-25

<160> 437

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2507

<212> DNA

<213> metapneumovirus

<220>

<221> CDS

<222> (1)...(2507)

<223> Human metapneumovirus isolate 00-1 matrix protein
(M) and fusion protein (F) genes

<400> 1

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gctccgtaat ttacatgggt caactgcca tctttggggg tatagacacg ccttgctgga 1740
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aagaccaagg atggtattgt caaaatgcag ggtcaactgt ttactacca aatgaaaaag 1860
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agcagtcaaa ggagtgcac ataaacatat ctactactaa ttacccatgc aaagtttagc 1980
caggaagaca tcctatcagt atggttgcac tatctcctct tggggctttg gttgcttgct 2040
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aaggctgctc ttatataacc aaccaagacg cagacacagt gacaatagac aacactgtat 2160
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gctttgaccc agtcaagttt cctgaagatc aattcaatgt tgcacttgac caagttttcg 2280
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agaaaaggaaa cactggcttc atcattgtaa taattctaatt tgctgtcctt ggctctacca 2400
tgatcctagt gagtgttttt atcataataa agaaaacaaa gagaccaca ggagcacctc 2460
cagagctgag tgggtgtcac aacaatggct tcataccaca taattag 2507

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<210> 2

<211> 1596

<212> DNA

<213> pneumovirus

<220>

<221> CDS

<222> (1)...(1596)

<223> Avian pneumovirus fusion protein gene, partial cds

<400> 2

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acaggatggt atacaaatgt gttcacactt ggggttgagg atgtgaaaaa tctcacatgt 180
accgacgggc ccagcttaat aagaacagaa cttgaactga caaaaaatgc acttgaggaa 240
ctcaagacag tatcagcaga tcaattggca aaggaagcta ggataatgtc accaagaaaa 300
gcccggtttg ttctgggtgc catagcatta ggtgtggcaa ctgctgctgc tgtgacggct 360
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gctgtgaatg atctcaagga ctttataagt aaaaaattga cacctgcaat aaacaggaac 540
aagtgtgaca tctcagacct taagatggca gtgagctttg gacaatacaa tcggaggttc 600
ctcaatgtgg taagacagtt ttctgacaat gcaggtatta cgcctgcaat atctctagat 660
ttaatgactg acgctgagct tgtaagagct gtaagcaaca tgcccacatc ttcaggacag 720
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ggagtttatg gtagctctgt ggtctatata gtgcagcttc ctattttcgg tgtgatagat 840
acaccgtggt ggagggtgaa ggctgctcca ttatgttcag ggaaagacgg gaattatgca 900
tgtctcttgc gagaggacca aggttggtat tgtcaaaatg ctggatccac agtttattat 960
ccaaatgagg aggactgtga agtaagaagt gatcatgtgt tttgtgacac agcagctggg 1020
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agacctttgg ggaaaggggtg ttcatacatc agcaatcaag atgctgacac tgttacaatt 1260
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cccaaattcc caatggaaat gaatgggtgtg aacaac 1596

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<210> 3

<211> 1666

<212> DNA

<213> pneumovirus

<220>
 <221> CDS
 <222> (14)...(1627)
 <223> Avian pneumovirus isolate 1b fusion protein mRNA,
 complete cds

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 gagtggtttt aggacaggat ggtatacaaa tgtgttcaca cttgagggtg gagatgtgga 180
 aaatctcaca tgtaccgacg ggcccagctt aataagaaca gaacttgaac tgacaaaaaa 240
 tgcacttgag gaactcaaga cagtatcagc agatcaattg gcaaaggaag ctaggataat 300
 gtcaccaaga aaagcccggt ttgttctggg tgccatagca ttaggtgtgg caactgctgc 360
 tgctgtgacg gctgggtgtag cgatagccaa gacaattagg ctagaaggag aagtggctgc 420
 aatcaagggt gcgctcagga aaacaaatga ggctgtatct acattaggaa atggcgtgag 480
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 cccttaattt tagttattaa aaaaaaaaaa aaaaaaaaaa aaaaaa 1666

<210> 4
 <211> 1636
 <212> DNA
 <213> rhinotracheitis virus

<220>
 <221> CDS
 <222> (13)...(1629)
 <223> Turkey rhinotracheitis virus gene for fusion
 protein (F1 and F2 subunits), complete cds

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<210> 5

<211> 1860

<212> DNA

<213> pneumovirus

<220>

<221> CDS

<222> (1)...(110)

<223> Avian pneumovirus matrix protein (M) gene, partial
cds

<220>

<221> CDS

<222> (216)...(1829)

<223> Avian pneumovirus fusion glycoprotein (F) gene,
complete cds

<400> 5

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gtgtgaacaa caaaggattt atcccttaat tttagttact aaaaaattgg gacaagtgaa 1860

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<210> 6
<211> 574
<212> PRT
<213> paramyxovirus

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<220>
<223> paramyxovirus F protein hRSV B

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      20           25          30
Tyr Gln Ser Thr Cys Ser Ala Val Ser Arg Gly Tyr Phe Ser Ala Leu
      35           40          45
Arg Thr Gly Trp Tyr Thr Ser Val Ile Thr Ile Glu Leu Ser Asn Ile
      50           55          60
Lys Glu Thr Lys Cys Asn Gly Thr Asp Thr Lys Val Lys Leu Ile Lys
 65           70          75          80
Gln Glu Leu Asp Lys Tyr Lys Asn Ala Val Thr Glu Leu Gln Leu Leu
      85           90          95
Met Gln Asn Thr Pro Ala Ala Asn Asn Arg Ala Arg Arg Glu Ala Pro
      100          105         110
Gln Tyr Met Asn Tyr Thr Ile Asn Thr Thr Lys Asn Leu Asn Val Ser
      115         120         125
Ile Ser Lys Lys Arg Lys Arg Arg Phe Leu Gly Phe Leu Leu Gly Val
      130         135         140
Gly Ser Ala Ile Ala Ser Gly Ile Ala Val Ser Lys Val Leu His Leu
 145         150         155         160
Glu Gly Glu Val Asn Lys Ile Lys Asn Ala Leu Leu Ser Thr Asn Lys
      165         170         175
Ala Val Val Ser Leu Ser Asn Gly Val Ser Val Leu Thr Ser Lys Val
      180         185         190
Leu Asp Leu Lys Asn Tyr Ile Asn Asn Gln Leu Leu Pro Ile Val Asn
      195         200         205
Gln Gln Ser Cys Arg Ile Ser Asn Ile Glu Thr Val Ile Glu Phe Gln
      210         215         220
Gln Lys Asn Ser Arg Leu Leu Glu Ile Asn Arg Glu Phe Ser Val Asn
 225         230         235         240
Ala Gly Val Thr Thr Pro Leu Ser Thr Tyr Met Leu Thr Asn Ser Glu
      245         250         255
Leu Leu Ser Leu Ile Asn Asp Met Pro Ile Thr Asn Asp Gln Lys Lys
      260         265         270
Leu Met Ser Ser Asn Val Gln Ile Val Arg Gln Gln Ser Tyr Ser Ile
      275         280         285
Met Ser Ile Ile Lys Glu Glu Val Leu Ala Tyr Val Val Gln Leu Pro
      290         295         300
Ile Tyr Gly Val Ile Asp Thr Pro Cys Trp Lys Leu His Thr Ser Pro
 305         310         315         320
Leu Cys Thr Thr Asn Ile Lys Glu Gly Ser Asn Ile Cys Leu Thr Arg
      325         330         335
Thr Asp Arg Gly Trp Tyr Cys Asp Asn Ala Gly Ser Val Ser Phe Phe
      340         345         350
Pro Gln Ala Asp Thr Cys Lys Val Gln Ser Asn Arg Val Phe Cys Asp
      355         360         365

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Thr Met Asn Ser Leu Thr Leu Pro Ser Glu Val Ser Leu Cys Asn Thr
  370          375          380
Asp Ile Phe Asn Ser Lys Tyr Asp Cys Lys Ile Met Thr Ser Lys Thr
 385          390          395          400
Asp Ile Ser Ser Ser Val Ile Thr Ser Leu Gly Ala Ile Val Ser Cys
          405          410          415
Tyr Gly Lys Thr Lys Cys Thr Ala Ser Asn Lys Asn Arg Gly Ile Ile
          420          425          430

Lys Thr Phe Ser Asn Gly Cys Asp Tyr Val Ser Asn Lys Gly Val Asp
  435          440          445
Thr Val Ser Val Gly Asn Thr Leu Tyr Tyr Val Asn Lys Leu Glu Gly
  450          455          460
Lys Asn Leu Tyr Val Lys Gly Glu Pro Ile Ile Asn Tyr Tyr Asp Pro
 465          470          475          480
Leu Val Phe Pro Ser Asp Glu Phe Asp Ala Ser Ile Ser Gln Val Asn
          485          490          495
Glu Lys Ile Asn Gln Ser Leu Ala Phe Ile Arg Arg Ser Asp Glu Leu
          500          505          510
Leu His Asn Val Asn Thr Gly Lys Ser Thr Thr Asn Ile Met Ile Thr
          515          520          525
Thr Ile Ile Ile Val Ile Ile Val Val Leu Leu Ser Leu Ile Ala Ile
          530          535          540
Gly Leu Leu Leu Tyr Cys Lys Ala Lys Asn Thr Pro Val Thr Leu Ser
 545          550          555          560
Lys Asp Gln Leu Ser Gly Ile Asn Asn Ile Ala Phe Ser Lys
          565          570

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<210> 7
 <211> 574
 <212> PRT
 <213> paramyxovirus

<220>
 <223> paramyxovirus F protein hRSV A2

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<400> 7
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          20          25          30
Tyr Gln Ser Thr Cys Ser Ala Val Ser Lys Gly Tyr Leu Ser Ala Leu
          35          40          45
Arg Thr Gly Trp Tyr Thr Ser Val Ile Thr Ile Glu Leu Ser Asn Ile
          50          55          60
Lys Glu Asn Lys Cys Asn Gly Thr Asp Ala Lys Val Lys Leu Ile Lys
 65          70          75          80
Gln Glu Leu Asp Lys Tyr Lys Asn Ala Val Thr Glu Leu Gln Leu Leu
          85          90          95
Met Gln Ser Thr Pro Pro Thr Asn Asn Arg Ala Arg Arg Glu Leu Pro
          100          105          110
Arg Phe Met Asn Tyr Thr Leu Asn Asn Ala Lys Lys Thr Asn Val Thr
          115          120          125
Leu Ser Lys Lys Arg Lys Arg Arg Phe Leu Gly Phe Leu Leu Gly Val
          130          135          140
Gly Ser Ala Ile Ala Ser Gly Val Ala Val Ser Lys Val Leu His Leu
 145          150          155          160
Glu Gly Glu Val Asn Lys Ile Lys Ser Ala Leu Leu Ser Thr Asn Lys
          165          170          175
Ala Val Val Ser Leu Ser Asn Gly Val Ser Val Leu Thr Ser Lys Val

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1           5           10           15
Ser Cys Ser Thr Ile Thr Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly
20           25           30
Trp Tyr Thr Asn Val Phe Thr Leu Glu Val Gly Asp Val Glu Asn Leu
35           40           45

Thr Cys Ala Asp Gly Pro Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr
50           55           60
Lys Ser Ala Leu Arg Glu Leu Arg Thr Val Ser Ala Asp Gln Leu Ala
65           70           75           80
Arg Glu Glu Gln Ile Glu Asn Pro Arg Gln Ser Arg Phe Val Leu Gly
85           90           95
Ala Ile Ala Leu Gly Val Ala Thr Ala Ala Val Thr Ala Gly Val
100           105           110
Ala Ile Ala Lys Thr Ile Arg Leu Glu
115           120

```

<210> 9
 <211> 539
 <212> PRT
 <213> metapneumovirus

<220>
 <223> Human metapneumovirus isolate 00-1 matrix protein
 (M) and fusion protein (F) genes

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<400> 9
Met Ser Trp Lys Val Val Ile Ile Phe Ser Leu Leu Ile Thr Pro Gln
1           5           10           15
His Gly Leu Lys Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Ile Thr
20           25           30
Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
35           40           45
Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Ala Asp Gly Pro
50           55           60
Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
65           70           75           80
Leu Arg Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
85           90           95
Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
100           105           110
Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
115           120           125
Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu Lys Lys Thr
130           135           140
Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
145           150           155           160
Ala Val Arg Glu Leu Lys Asp Phe Val Ser Lys Asn Leu Thr Arg Ala
165           170           175
Ile Asn Lys Asn Lys Cys Asp Ile Ala Asp Leu Lys Met Ala Val Ser
180           185           190
Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
195           200           205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
210           215           220
Ala Glu Leu Ala Arg Ala Val Ser Asn Met Pro Thr Ser Ala Gly Gln
225           230           235           240
Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
245           250           255
Gly Phe Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln

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Arg	Leu	Glu	Gly	Glu	Val	Ala	Ala	Ile	Lys	Gly	Ala	Leu	Arg	Lys	Thr
130						135					140				
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr
145					150					155					160
Ala	Val	Asn	Asp	Leu	Lys	Asp	Phe	Ile	Ser	Lys	Lys	Leu	Thr	Pro	Ala
			165						170					175	
Ile	Asn	Arg	Asn	Lys	Cys	Asp	Ile	Ser	Asp	Leu	Lys	Met	Ala	Val	Ser
			180					185					190		
Phe	Gly	Gln	Tyr	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser
	195					200						205			
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp
210					215						220				
Ala	Glu	Leu	Val	Arg	Ala	Val	Ser	Asn	Met	Pro	Thr	Ser	Ser	Gly	Gln
225					230					235					240
Ile	Asn	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe
			245						250					255	
Gly	Ile	Leu	Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Val	Tyr	Ile	Val	Gln
		260					265						270		
Leu	Pro	Ile	Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Arg	Val	Lys	Ala
	275						280					285			
Ala	Pro	Leu	Cys	Ser	Gly	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg
290						295					300				
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr
305					310					315					320
Pro	Asn	Glu	Glu	Asp	Cys	Glu	Val	Arg	Ser	Asp	His	Val	Phe	Cys	Asp
			325						330				335		
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Lys	Glu	Ser	Glu	Glu	Cys	Asn	Arg
		340						345					350		
Asn	Ile	Ser	Thr	Thr	Lys	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His
	355						360					365			
Pro	Ile	Ser	Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys
370						375					380				
Tyr	Asp	Gly	Met	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Lys	Val	Gly	Ile	Ile
385					390					395					400
Arg	Pro	Leu	Gly	Lys	Gly	Cys	Ser	Tyr	Ile	Ser	Asn	Gln	Asp	Ala	Asp
			405						410					415	
Thr	Val	Thr	Ile	Asp	Asn	Thr	Val	Tyr	Gln	Leu	Ser	Lys	Val	Glu	Gly
		420						425					430		
Glu	Gln	His	Thr	Ile	Lys	Gly	Lys	Pro	Val	Ser	Ser	Asn	Phe	Asp	Pro
		435					440					445			
Ile	Glu	Phe	Pro	Glu	Asp	Gln	Phe	Asn	Val	Ala	Leu	Asp	Gln	Val	Phe
	450					455					460				
Glu	Ser	Val	Glu	Lys	Ser	Gln	Asn	Leu	Ile	Asp	Gln	Ser	Asn	Lys	Ile
465					470					475					480
Leu	Asp	Ser	Ile	Glu	Lys	Gly	Asn	Ala	Gly	Phe	Val	Ile	Val	Ile	Val
			485						490					495	
Leu	Ile	Val	Leu	Leu	Met	Leu	Ala	Ala	Val	Gly	Val	Gly	Val	Phe	Phe
		500						505					510		
Val	Val	Lys	Lys	Arg	Lys	Ala	Ala	Pro	Lys	Phe	Pro	Met	Glu	Met	Asn
		515					520					525			
Gly	Val	Asn	Asn												
530															

<210> 11

<211> 537

<212> PRT

<213> Avian pneumovirus

<220>

<223> Avian pneumovirus isolate 1b fusion protein mRNA,
complete cds

```

<400> 11
Met Ser Trp Lys Val Val Leu Leu Leu Val Leu Leu Ala Thr Pro Thr
 1          5          10          15
Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
          20          25          30
Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
          35          40          45
Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
          50          55          60
Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu
65          70          75          80
Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met
          85          90          95
Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
          100          105          110

Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
          115          120          125
Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
          130          135          140
Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
145          150          155          160
Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala
          165          170          175
Ile Asn Arg Asn Lys Cys Asp Ile Ser Asp Leu Lys Met Ala Val Ser
          180          185          190
Phe Gly Gln Tyr Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
          195          200          205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
210          215          220
Ala Glu Leu Val Arg Ala Val Ser Asn Met Pro Thr Ser Ser Gly Gln
225          230          235          240
Ile Asn Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
          245          250          255
Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Val Tyr Ile Val Gln
          260          265          270
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Lys Val Lys Ala
          275          280          285
Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg
          290          295          300
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
305          310          315          320
Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His Val Phe Cys Asp
          325          330          335
Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu Glu Cys Asn Arg
          340          345          350
Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
          355          360          365
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
          370          375          380
Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
385          390          395          400
Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln Asp Ala Asp
          405          410          415
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
          420          425          430
Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser Asn Phe Asp Pro
          435          440          445
Ile Glu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
          450          455          460

```

Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln Ser Asn Lys Ile
 465 470 475 480
 Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val Ile Val Ile Val
 485 490 495
 Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val Gly Val Phe Phe
 500 505 510
 Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro Met Glu Met Asn
 515 520 525
 Gly Val Asn Asn Lys Gly Phe Ile Pro
 530 535

<210> 12
 <211> 538
 <212> PRT
 <213> Turkey rhinotracheitis virus

<220>
 <223> Turkey rhinotracheitis virus gene for fusion
 protein (F1 and F2 subunits), complete cds

<400> 12
 Met Asp Val Arg Ile Cys Leu Leu Leu Phe Leu Ile Ser Asn Pro Ser
 1 5 10 15
 Ser Cys Ile Gln Glu Thr Tyr Asn Glu Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Lys Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Asn Leu Glu Ile Gly Asn Val Glu Asn Ile Thr Cys Asn Asp Gly Pro
 50 55 60
 Ser Leu Ile Asp Thr Glu Leu Val Leu Thr Lys Asn Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Val Ala Lys Glu Ser Arg Leu Ser
 85 90 95
 Ser Pro Arg Arg Arg Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Leu Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Lys Ala Ile Lys Asn Ala Leu Arg Asn Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Glu Phe Ile Ser Lys Lys Leu Thr Pro Ala
 165 170 175
 Ile Asn Gln Asn Lys Cys Asn Ile Ala Asp Ile Lys Met Ala Ile Ser
 180 185 190
 Phe Gly Gln Asn Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Ser Ala Gly Ile Thr Ser Ala Val Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Asp Glu Leu Val Arg Ala Ile Asn Arg Met Pro Thr Ser Ser Gly Gln
 225 230 235 240
 Ile Ser Leu Met Leu Asn Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Asp Gly Thr Val Val Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Glu Thr Pro Cys Trp Arg Val Val Ala
 275 280 285
 Ala Pro Leu Cys Arg Lys Glu Lys Gly Asn Tyr Ala Cys Ile Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Thr Asn Ala Gly Ser Thr Ala Tyr Tyr
 305 310 315 320

Pro Asn Lys Asp Asp Cys Glu Val Arg Asp Asp Tyr Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Leu Glu Val Glu Gln Cys Asn Tyr
 340 345 350
 Asn Ile Ser Thr Ser Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Val Ser Met Val Ala Leu Thr Pro Leu Gly Gly Leu Val Ser Cys
 370 375 380
 Tyr Glu Ser Val Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Gly Lys Gly Cys Thr His Ile Pro Asn Asn Glu Ala Asp
 405 410 415
 Thr Ile Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Val Gly
 420 425 430
 Glu Gln Arg Thr Ile Lys Gly Ala Pro Val Val Asn Asn Phe Asn Pro
 435 440 445
 Ile Leu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460

 Glu Ser Ile Asp Arg Ser Gln Asp Leu Ile Asp Lys Ser Asn Asp Leu
 465 470 475 480
 Leu Gly Ala Asp Ala Lys Ser Lys Ala Gly Ile Ala Ile Ala Ile Val
 485 490 495
 Val Leu Val Ile Leu Gly Ile Phe Phe Leu Leu Ala Val Ile Tyr Tyr
 500 505 510
 Cys Ser Arg Val Arg Lys Thr Lys Pro Lys His Asp Tyr Pro Ala Thr
 515 520 525
 Thr Gly His Ser Ser Met Ala Tyr Val Ser
 530 535

<210> 13
 <211> 537
 <212> PRT
 <213> Avian penumovirus

<220>
 <223> Avian pneumovirus fusion glycoprotein (F) gene,
 complete cds

<400> 13
 Met Ser Trp Lys Val Val Leu Leu Leu Val Leu Leu Ala Thr Pro Thr
 1 5 10 15
 Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
 50 55 60
 Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met
 85 90 95
 Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala

Ile	Asn	Arg	Asn	165	Lys	Cys	Asp	Ile	Ser	170	Asp	Leu	Lys	Met	175	Ala	Val	Ser
			180						185						190			
Phe	Gly	Gln	Tyr	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser			
		195					200							205				
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp			
	210					215					220							
Ala	Glu	Leu	Val	Arg	Ala	Val	Ser	Asn	Met	Pro	Thr	Ser	Ser	Gly	Gln			
225					230					235					240			
Ile	Asn	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe			
			245						250						255			
Gly	Ile	Leu	Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Val	Tyr	Ile	Val	Gln			
		260						265						270				
Leu	Pro	Ile	Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Lys	Val	Lys	Ala			
	275						280						285					
Ala	Pro	Leu	Cys	Ser	Gly	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg			
	290					295				300								
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr			
305					310					315					320			
Pro	Asn	Glu	Glu	Asp	Cys	Glu	Val	Arg	Ser	Asp	His	Val	Phe	Cys	Asp			
				325					330					335				
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Lys	Glu	Ser	Glu	Glu	Cys	Asn	Arg			
			340					345						350				
Asn	Ile	Ser	Thr	Thr	Lys	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His			
	355						360						365					
Pro	Ile	Ser	Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys			
	370					375					380							
Tyr	Asp	Gly	Met	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Lys	Val	Gly	Ile	Ile			
385					390					395					400			
Arg	Pro	Leu	Gly	Lys	Gly	Cys	Ser	Tyr	Ile	Ser	Asn	Gln	Asp	Ala	Asp			
			405						410					415				
Thr	Val	Thr	Ile	Asp	Asn	Thr	Val	Tyr	Gln	Leu	Ser	Lys	Val	Glu	Gly			
			420					425						430				
Glu	Gln	His	Thr	Ile	Lys	Gly	Lys	Pro	Val	Ser	Ser	Asn	Phe	Asp	Pro			
	435					440						445						
Ile	Glu	Phe	Pro	Glu	Asp	Gln	Phe	Asn	Ile	Ala	Leu	Asp	Gln	Val	Phe			
	450					455					460							
Glu	Ser	Val	Glu	Lys	Ser	Gln	Asn	Leu	Ile	Asp	Gln	Ser	Asn	Lys	Ile			
465					470					475					480			
Leu	Asp	Ser	Ile	Glu	Lys	Gly	Asn	Ala	Gly	Phe	Val	Ile	Val	Ile	Val			
			485						490					495				
Leu	Ile	Val	Leu	Leu	Met	Leu	Ala	Ala	Val	Gly	Val	Gly	Val	Phe	Phe			
		500					505						510					
Val	Val	Lys	Arg	Lys	Ala	Ala	Pro	Lys	Phe	Pro	Met	Glu	Met	Asn				
	515					520					525							
Gly	Val	Asn	Asn	Lys	Gly	Phe	Ile	Pro										
	530					535												

<210> 14

<211> 1193

<212> DNA

<213> rhinotracheitis virus

<220>

<221> CDS

<222> (16)...(1191)

<223> Turkey rhinotracheitis virus (strain CVL14/1)
attachment protien (G) mRNA, complete cds

<400> 14

```

gggacaagta tctctatggg gtccaaacta tatatggctc agggcaccag tgcatatcaa 60
actgcagtgg ggttctggct ggacatcggg aggaggtaca tattggctat agtcctatca 120
gctttcgggc tgacctgcac agtcactatt gcactcactg ttagcgtcat agttgaacag 180
tcagtgttag aggagtgcag aaactacaat ggaggagata gagattgggtg gtcaaccacc 240
caggagcagc caactactgc accaagtgcg actccagcag gaaattatgg aggattacaa 300
acggctcgaa caagaaagtc tgaaagctgt ttgcatgtgc aaattttctta tggatgatag 360
tatagccgca gtgatactgt actgggtgggt tttgattgta tgggcttatt ggttctttgc 420
aaatcaggac caatttgtca gcgagataat caagttgacc caacagccct ctgccattgc 480
agggtagatc tttcaagtgt ggactgctgc aaggtgaaca agattagcac taacagcagc 540
accacctctg agccccagaa gaccaaccgg gcatggccta gccaaagaaa cacagactcc 600
gatccaaatc cccaaggcat aaccaccagc acagccactc tgctctcaac aagtctgggc 660
ctcatgtctc catcgaagac tgggacacac aaatcagggg ccccccaagc cttgccgggg 720
agcaaacacca acggaaaaac aaccacagac cgagaaccag ggcccacaaa ccaaccaaat 780
tcaaccacca atgggcaaca caataaacac acccaacgaa tgacaccccc gccaaagtcac 840
gacaacacaa gaaccatcct ccagcacaca acaccctggg' aaaagacatt cagtacatac 900
aagcccacac actctccgac caacgaatca gatcaatccc tccccacaa ctaaaacagc 960
atcaactgtg aacattttga ccccaaggc aaggaaaaaa tctgctacag agtaggttct 1020
tacaactcca atattacaaa gcaatgcaga attgatgtgc ctttgtgttc cacttatagc 1080
acagtgtgca tgaaaacata ctataccgaa ccattcaact gttggaggcg tatctggcgt 1140
tgcttgtgtg atgacggagt tggctctggtt gagtgggtgtt gcactagtta act 1193

```

```

<210> 15
<211> 1260
<212> DNA
<213> rhinotracheitis virus

```

```

<220>
<221> CDS
<222> (16)...(1260)
<223> Turkey rhinotracheitis virus (strain 6574)
        attachment protein (G), complete cds

```

```

<400> 15
gggacaagta tccagatggg gtcagagctc tacatcatag aggggggtgag ctcatctgaa 60
atagtcctca agcaagtcct cagaaggagc caaaaaatac tgtaggact ggtgttatca 120
gccttaggct tgacgctcac tagcactatt gttatatcta tttgtattag tgtagaacag 180
gtcaaattac gacagtgtgt ggacacttat tgggcggaaa atggatcctt acatccagga 240
cagtcaacag aaaatacttc aacaagaggt aagactacaa caaaagacct tagaagatta 300
caggcgactg gagcaggaaa gtttgagagc tgtgggtatg tgcaagttgt tgatgggtgat 360
atgcatgata gcagttatgc tgtactgggt ggtgttgatt gtttgggctt attggctctt 420
tgtgaatcag gaccaatttg tcaggggagat acttgggtctg aagacggaaa cttctgccga 480
tgcacttttt cttcccatgg ggtgagttgc tgcaaaaaaac ccaaagcaa ggcaaccact 540
gccagagga actccaaacc agctaacagc aaatcaactc ctccggtaca ttcagacagg 600
gccagcaaag aacataatcc ctcccaaggg gagcaacccc gcaggggggccc aaccagcagc 660
aagacaacta ttgctagcac cccttcaaca gaggacactg ctaaaccacac gattagcaaa 720
cctaaactca ccatcaggcc ctcgcaaaga ggtccatccg gcagcacaaa agcagcctcc 780
agcaccoccc gccacaagac caacaccaga ggcaccagca agacgaccga ccagagacc 840
cgaccgggac ccactcccga aaggcccaga caaaccaca gcacagcaac tccgcccccc 900
acaaccccaa tccacaaggg ccgggccccca acccccaaac caacaacaga cctcaagggtc 960
aacccaaggg aaggcagcac aagcccaact gcaatacaga aaaacccaac cacacaaagt 1020
aatcttgttg actgcacact gtctgatcca gatgagccac aaaggatttg ttaccaggta 1080
ggaacttaca atcctagtca atcgggaacc tgcaacatag aggttccaaa atgttccact 1140
tatgggcatg cttgtatggc tacattatat gacaccccat tcaactgctg gcgcaggacc 1200
aggagatgca tctgtgattc cggagggggag ctgattgagt ggtgctgtac tagtcaataa 1260

```

```

<210> 16
<211> 391
<212> PRT
<213> Turkey rhinotracheitis virus

```

```

<220>

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<223> Turkey rhinotracheitis virus (strain CVL14/1)
attachment protien (G) mRNA, complete cds

<400> 16

```

Met Gly Ser Lys Leu Tyr Met Ala Gln Gly Thr Ser Ala Tyr Gln Thr
 1           5           10           15
Ala Val Gly Phe Trp Leu Asp Ile Gly Arg Arg Tyr Ile Leu Ala Ile
          20           25           30
Val Leu Ser Ala Phe Gly Leu Thr Cys Thr Val Thr Ile Ala Leu Thr
          35           40           45
Val Ser Val Ile Val Glu Gln Ser Val Leu Glu Glu Cys Arg Asn Tyr
          50           55           60
Asn Gly Gly Asp Arg Asp Trp Trp Ser Thr Thr Gln Glu Gln Pro Thr
65           70           75           80
Thr Ala Pro Ser Ala Thr Pro Ala Gly Asn Tyr Gly Gly Leu Gln Thr
          85           90           95
Ala Arg Thr Arg Lys Ser Glu Ser Cys Leu His Val Gln Ile Ser Tyr
          100          105          110
Gly Asp Met Tyr Ser Arg Ser Asp Thr Val Leu Gly Gly Phe Asp Cys
          115          120          125
Met Gly Leu Leu Val Leu Cys Lys Ser Gly Pro Ile Cys Gln Arg Asp
          130          135          140
Asn Gln Val Asp Pro Thr Ala Leu Cys His Cys Arg Val Asp Leu Ser
145          150          155          160
Ser Val Asp Cys Cys Lys Val Asn Lys Ile Ser Thr Asn Ser Ser Thr
          165          170          175
Thr Ser Glu Pro Gln Lys Thr Asn Pro Ala Trp Pro Ser Gln Asp Asn
          180          185          190
Thr Asp Ser Asp Pro Asn Pro Gln Gly Ile Thr Thr Ser Thr Ala Thr
          195          200          205
Leu Leu Ser Thr Ser Leu Gly Leu Met Leu Thr Ser Lys Thr Gly Thr
          210          215          220
His Lys Ser Gly Pro Pro Gln Ala Leu Pro Gly Ser Asn Thr Asn Gly
225          230          235          240
Lys Thr Thr Thr Asp Arg Glu Pro Gly Pro Thr Asn Gln Pro Asn Ser
          245          250          255
Thr Thr Asn Gly Gln His Asn Lys His Thr Gln Arg Met Thr Pro Pro
          260          265          270
Pro Ser His Asp Asn Thr Arg Thr Ile Leu Gln His Thr Thr Pro Trp
          275          280          285
Glu Lys Thr Phe Ser Thr Tyr Lys Pro Thr His Ser Pro Thr Asn Glu
          290          295          300
Ser Asp Gln Ser Leu Pro Thr Thr Gln Asn Ser Ile Asn Cys Glu His
305          310          315          320
Phe Asp Pro Gln Gly Lys Glu Lys Ile Cys Tyr Arg Val Gly Ser Tyr
          325          330          335
Asn Ser Asn Ile Thr Lys Gln Cys Arg Ile Asp Val Pro Leu Cys Ser
          340          345          350
Thr Tyr Ser Thr Val Cys Met Lys Thr Tyr Tyr Thr Glu Pro Phe Asn
          355          360          365
Cys Trp Arg Arg Ile Trp Arg Cys Leu Cys Asp Asp Gly Val Gly Leu
          370          375          380
Val Glu Trp Cys Cys Thr Ser
385          390

```

<210> 17

<211> 414

<212> PRT

<213> rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain 6574)
attachment protein (G), complete cds

<400> 17

```

Met Gly Ser Glu Leu Tyr Ile Ile Glu Gly Val Ser Ser Ser Glu Ile
 1           5           10           15
Val Leu Lys Gln Val Leu Arg Arg Ser Gln Lys Ile Leu Leu Gly Leu
 20           25           30
Val Leu Ser Ala Leu Gly Leu Thr Leu Thr Ser Thr Ile Val Ile Ser
 35           40           45
Ile Cys Ile Ser Val Glu Gln Val Lys Leu Arg Gln Cys Val Asp Thr
 50           55           60
Tyr Trp Ala Glu Asn Gly Ser Leu His Pro Gly Gln Ser Thr Glu Asn
 65           70           75           80
Thr Ser Thr Arg Gly Lys Thr Thr Thr Lys Asp Pro Arg Arg Leu Gln
 85           90           95
Ala Thr Gly Ala Gly Lys Phe Glu Ser Cys Gly Tyr Val Gln Val Val
 100          105          110
Asp Gly Asp Met His Asp Arg Ser Tyr Ala Val Leu Gly Gly Val Asp
 115          120          125
Cys Leu Gly Leu Leu Ala Leu Cys Glu Ser Gly Pro Ile Cys Gln Gly
 130          135          140

Asp Thr Trp Ser Glu Asp Gly Asn Phe Cys Arg Cys Thr Phe Ser Ser
 145          150          155          160
His Gly Val Ser Cys Cys Lys Lys Pro Lys Ser Lys Ala Thr Thr Ala
 165          170          175
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<211> 907

<212> DNA

<213> human metapneumo virus

<400> 86

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ctgagtattg ccctcaatat ctatctgata ataaactata aaatgcaaaa aaacacatct 180
gaatcagaac atcacaccag ctcatcaccg atggaatcca gcagagaaac tccaacgggtc 240
cccacagata attcagacac caactcaagc ccacaacatc caactcaaca gtccacagaa 300
ggctccacac tctactttgc agcctcagca aactcaccag agacagaacc aacatcaaca 360
ccagacacaa caaacggccc gcccttcgct gacacacaca caacaccacc aagcgcaagc 420
agaacaaaga caagtccggc agtccacaca aaaaacaacc caaggataag ctccagaaca 480
cactctccac catgggcaac gacaaggacg gcacgcagaa ccaccactct ccgcacaagc 540
agcacaagaa agagaccgtc cacagcatca gcccaaccg acatcagcgc aacaacccac 600
aaaaacgaag aagcaagtcc agcgagccca caaacatctg caagcacaac aagaacacaa 660
aggaaaagcg tggaggccaa cacatcaaca acatacaacc aaactagtta acaaaaaata 720
caaaataact ctaagataaa ccatgcagac accaacaatg gagaagtcaa aagacaattc 780
acaatctccc caaaaaggca acaacaccat attagctctg cccaaatctc cctggaaaaa 840
acactcgccc atataccaaa aataccacaa ccaccccaag aaaaaaactg ggcaaaaacaa 900
cacccaa 907

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<210> 87

<211> 907

<212> DNA

<213> human metapneumo virus

<400> 87

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atggaggtga aagtggagaa cattcgaaca atagatatgc tcaaagcaag agtaaaaaat 60

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gaatcagaac atcacaccag ctcatcacc atggaatcca gcagagaaac tccaacgggtc 240
cccacagata attcagacac caactcaagc ccacaacatc caactcaaca gtccacagaa 300
ggctccacac tctactttgc agcctcagca aactcaccag agacagaacc aacatcaaca 360
ccagacacaa cagaccgccc gcccttcgtc gacacacaca caacaccacc aagcgcaagc 420
agaacaaaga caagtccggc agtccacaca aaaaacaacc caaggataag ctccagaaca 480
cattctccac catgggcaac gacaaggacg gcacgcagaa ccaccactct cgcgacaagc 540
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caaaataact ctaagataaa ccatgcagac accaacaatg gagaagtcaa aagacaattc 780
acaatctccc caaaaaggca acaacaccat attagctctg cccaaatctc cctggaaaaa 840
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cacccaa 907

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<210> 88

<211> 907

<212> DNA

<213> human metapneumo virus

<400> 88

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ttgagtattg ccctcaatat ctatctgata ataaactata aaatgcaaaa aaacacatct 180
gaatcagaac atcacaccag ctcatcacc atggaatcca gcagagaaac tccaacgggtc 240
cccacagata attcagacac caactcaagc ccacaacatc caactcaaca gtccacagaa 300
ggctccacac tctactttgc agcctcagca agctcaccag agacagaacc aacatcaaca 360
ccagacacaa cagaccgccc gcccttcgtc gacacacaca caacaccacc aagcgcaagc 420
agaacaaaga caagtccggc agtccacaca aaaaacaacc caaggataag ctccagaaca 480
cattctccac catgggcaac gacaaggacg gcacgcagaa ccaccactct cgcgacaagc 540
agcacaagaa agagaccgtc cacagcatca gtccaacccg acatcagcgc aacaaccac 600
aaaaacgaag aagcaagtcc agcgagccca caaacatctg caagcacaac aagaacacaa 660
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caaaataact ctaagataaa ccatgcagac accaacaatg gagaagtcaa aagacaattc 780
acaatctccc caaaaaggca acaacaccat attagctctg cccaaatctc cctggaaaaa 840
acactcgccc atataccaaa aataccacaa ccacccaag aaaaaaactg ggcaaaacaa 900
cacccaa 907

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<210> 89

<211> 907

<212> DNA

<213> human metapneumo virus

<400> 89

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cgtgtggcac gcagcaaagt ctttaaaaaat gcctcttttg tcctaataagg aataactaca 120
ttgagtatag ccctcaatat ctatctgata ataaactata caatgcaaga aaacacatcc 180
gaatcagaac atcacaccag ctcatcacc atggaatcca gcagggaaac tccaacgggtc 240
cccatagaca actcagacac caatccaggc tcacagtatc caactcaaca gtccacagaa 300
gactccacac tccactctgc agcttcagca agctcaccag agacagaacc aacatcaaca 360
ccagacacaa caagccgccc gcccttcgtc gacacacaca caacaccacc aagtgcgaagc 420
aggacaagga caagtccggc agtccacaca aaaaacaatc caagggtaag cccacagaaca 480
cattccccac catgggcaat gacaaggacg gtccgcggaa ccaccactct cgcgacaagc 540
agcacaagaa aaagactgtc tacagcatca gtccaacccg acagcagcgc aacaaccac 600
aaacacgaag aaacaagccc agtgagccca caaacatctg caagcacagc aagaccacaa 660
aggaagggca tggaggccaa cacatcaaca acatacaacc aaactagtta acaaaaaata 720
caaaataact ctaagataaa ccatgtagac accaacaatt gagaagccaa aaggcaattc 780
acaatctccc aaaaaagcaa caacaccata ttagctccgc ttaaattctc ctgaaaaaaa 840
cactcaccca tataccaact ataccacaa catcccaaga aaaaaggctg ggcaaaacaa 900
cacccaa 907

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<210> 90
 <211> 908
 <212> DNA
 <213> human metapneumo virus

<400> 90
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 cgtgtggcac gcagcaaata ctttaaaaat gcctctttga tcctaataagg aataactaca 120
 ttgagtatag ccctcaatat ctatctgatc ataaactata caatgcaaga aaacacatcc 180
 gaatcagaac atcacaccag ttcacacccc atggaatcca gcagggaaac tccaacggtc 240
 cctatggaca actcagacac caatccaggc tcacagtatc caactcaaca gtccacagaa 300
 ggctccacac tccactttgc agcctcagca agctcaccag agacagaacc aacatcaaca 360
 ccagacacaa caagccgccc gcccttcgctc gacacacaca caacaccatc aagtgcagc 420
 agaacaaaga caagtccggc agtccacaca aaaaacaatc taaggataag cccagaaca 480
 cattccccac catgggcaat gacaaggacg gtccgtggaa ccaccactct ccgcacaagc 540
 agcataagaa aaagaccgct cacagcatca gtccaacctg acagcagcgc aacaaccac 600
 aaacacgaag aagcaagccc agtgagcccg caagcatctg caagcacagc aagaccacaa 660
 aggaagggca tggaggccag cacatcaaca acatacaacc aaactagtta aaaaaaata 720
 taaaataact ctaagataaa ccatgtagac accaacaatt gagaagccaa aaggcaattc 780
 acaatctccc caaaaaggca acaacaccat attagctccg cttaaatctc cctggaaaaa 840
 acactcgccc atataccaac tataaccacaa ccatcccaag gaaaaaagct gggtaaaaca 900
 acacccaa 908

<210> 91
 <211> 908
 <212> DNA
 <213> human metapneumo virus

<400> 91
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 cgtgtggcac gcagcaaata ctttaaaaat gcctctttga tcctaataagg aataactaca 120
 ttgagtatag ccctcaatat ctatctgatc ataaactata caatgcaaga aaacacatcc 180
 gaatcagaac atcacaccag ctcatcacc ctcacagtatc caactcaaca gtccacagaa 300
 cctatggaca actcagacac caatccaggc agcctcagca agctcaccag agacagaacc aacatcaaca 360
 ggctccacac tccactttgc agcctcagca gacacacaca caacaccatc aagtgcagc 420
 ccagacacaa caagccgccc gcccttcgctc gacacacaca caacaccatc aagtgcagc 420
 agaataagga caagtccggc agtccacaca aaaaacaatc taaggataag cccagaaca 480
 cattccccac catgggcaat gacaaggacg gtccgtggaa ccaccactct ccgcacaagc 540
 agcataagaa aaagaccgct cacagcatca gtccaacctg acagcagcgc aacaaccac 600
 aaacacgaag aagcaagccc agtgagcccg caagcatctg caagcacagc aagaccacaa 660
 aggaagggca tggaggccag cacatcaaca acatacaacc aaactagtta aaaaaaata 720
 tacaataact ctaagataaa ccatgtagac accaacaatt gagaagccaa aaggcaattc 780
 acaatctccc caaaaaggca acaacaccat attagctccg cttaagtctc cctggaaaaa 840
 acactcgccc atataccaac tataaccacaa ccatccaaag aaaaaaagct gggcaaaaca 900
 acacccaa 908

<210> 92
 <211> 888
 <212> DNA
 <213> human metapneumo virus

<400> 92
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 ctgagtatag ctctcaatat ctatctgatc ataaactata caatacaaaa aaccacatcc 180
 gaatcagaac accacaccag ctacaccacc acagaaccca acaaggaagc ttcaacaatc 240
 tccacagaca acccagacat caatccaagc tcacagcatc caactcaaca gtccacagaa 300
 aacccacac tcaaccccg agcatcagc agcccatcag aaacagaacc agcatcaaca 360
 ccagacacaa caaacgcct gtctctcgta gcaggtcca cagcacaacc aagtgaagc 420
 agaacaaaga caaacccgac agtccacaca atcaacaacc caaacacagc ttccagtaca 480

caatccccac	cacggacaac	aacgaaggca	atccgcagag	ccaccacttt	ccgcatgagc	540
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aatcatgaag	aaacagggttc	agcgaaccca	caggcgtctg	caagcacaat	gcaaaactag	660
cacaccaata	atataaaacc	aaattagtta	acaaaaaatg	cgagatagct	ctaaagcaaa	720
acatgtaggt	accaacaatc	aagaaaccaa	aagacaactc	acaatctccc	taaaacagca	780
acgacaccat	gtcagctttg	ctcaaattctc	tctgggagaa	acttctaccc	acatactaac	840
aacatcacia	ccatctcaag	aaaagaaact	gggcaaaaca	gcattcaa		888

<210> 93

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 93

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ctgagtatag	ccctcaatat	ctatctgac	ataaactaca	caatacaaaa	aaccacatct	180
gaatcagaac	accacactag	ctcaccaccc	acagaatcca	acaaagaaac	ttcaacaatc	240
cccacagaca	acccagacat	caatccaaac	tcacagcatc	caacccaaca	gtccacagaa	300
agccccacac	tcaaccccg	agcctcggtg	agcccatcag	aaacagaacc	agcatcaaca	360
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agaacaaaaga	caaaaccaac	agtccacaca	aaaaacaatc	caagtacagt	ttccagaaca	480
caatccccac	tacgggcaac	aacgaaggcg	gtcctcagag	ccaccgcttt	ccgcacgagc	540
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aatcatgaag	aaacaagttc	agcgaaccca	caggcatctg	caagcacaat	gcaaagccag	660
cacaccaaca	acataaaacc	aaattagtta	acaaaaata	cgagatagct	ctaaagtaaa	720
acatgtaggt	accaacaatc	aaggaatcaa	aagacaactc	acaatctccc	taaaacagca	780
acaacatcat	gtcagttttg	ctcaaattctc	cctgggagaa	actttcgccc	acatactaac	840
aacatcacia	ccatctcaag	aaaagaaact	gggcaaaaca	gcacccaa		888

<210> 94

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 94

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ctgagcatag	ccctcaatat	ctatctgac	gtaaaactaca	caatacaaaa	aaccacatcc	180
gaatcagaac	accacaccag	ctcatcacc	acagaatcca	acaaaggaac	ttcaacaatc	240
cccacagaca	acccagacat	caatccaaat	tcacaacatc	caactcaaca	gtccacagaa	300
agccccacac	tcaacaccgc	agcctcggtg	agcccatcag	aaacagaacc	agcatcaaca	360
ccagacacaa	caaaccgcct	gtcctccgca	gacagatcca	caacacaacc	aagtgaagc	420
agaacaaaaga	caaagctgac	agtccacaca	aaaaacaacc	taagtacagc	ctccagaaca	480
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gacaccaaca	atacaaaaca	aaattagtta	acaaaaata	caagatagct	ctaaagtaaa	720
acatgtaggt	accaacagta	aagaaatcaa	aagacaactc	acaatctccc	caaaacagca	780
acaacatcat	gtcagcttcg	ctcaaattctc	cctgggagaa	actctcgccc	acatactaac	840
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<210> 95

<211> 887

<212> DNA

<213> human metapneumo virus

<400> 95

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ctgagtatag	ccctcaatat	ctatctgac	gtaaaactaca	caatacaaaa	aaccacatcc	180

gaatcagaac	accacactag	ctcatcacc	acagaatcca	acaaaggaac	ttcaacaatc	240
ccacagacaa	cccagacatc	aatccaaatt	cacaacatcc	aactcaacag	tccacagaaa	300
gccccacact	caacaccgca	gcctcgggtga	gccatcaga	aacagaacca	gcacaaacac	360
cagacacaa	aaaccgcctg	tcctccgcag	acagatccac	aacacaacca	agtgaagca	420
gaacaaagac	aaagtctgaca	gtccacacaa	aaaacaacct	aagtacagcc	tccagaacac	480
aatcaccacc	acgggcaaca	acgaaggcgg	tcctcagaga	caccgccttc	cacacgagca	540
gcacaggaaa	aagaccaacc	acaacatcag	tccagtctgg	cagcagcacc	acaactcaaa	600
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acaccaacaa	tacaaaaacaa	aattagttaa	caaaaaatac	aagatagctc	taaagtaaaa	720
catgtaggta	ccaacagtaa	agaaatcaaa	agacaactca	taatctcccc	aaaacagcaa	780
caacatcatg	tcagcttcgc	tcaaattctcc	ctggggagaaa	ctctcgccca	cataactaaca	840
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<210> 96

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 96

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ctgagtatag	ccctcaatat	ctatctgatc	ataaactaca	caatacaaaa	aaccacatct	180
gaatcagaac	accacactag	ctcaccaccc	acagaatcca	acaaagaaac	ttcaacaatc	240
cctatagaca	accagacat	caatccaaac	tcacagcatc	caactcaaca	gtccacagaa	300
agcctcacac	tcaaccccg	agcctcgggtg	agcccatcag	aaacagaacc	agcatcaaca	360
ccagacacaa	caaaccgcct	gtcctccgta	gacagatcca	caacacaacc	aagtgaagc	420
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aatcatgaag	aaacagggttc	agcgaaccca	caggcatctg	caagcacaat	gcaaaactag	660
cacaccaaca	ttgtaaaacc	aaattagtta	acaaaaaata	tgaaatagct	ctaaagttaa	720
acatgtaggt	gctaacaatc	aagaaatcaa	aagacatctc	ataatctctc	caaaacagca	780
acaacatcat	gtcaactttg	ctcaaatctc	cctggggagaa	actttcgccc	ccatactgac	840
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<210> 97

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 97

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ctgagtatag	ccctcaacat	ctatctgatc	ataaactaca	caatacaaaa	aaccacatct	180
gaatcagaac	accacactag	ctcaccaccc	acagaatcta	acaaagaaac	ttcaacaatc	240
tctatagaca	accagacat	caatccaaac	tcacagcatc	caactcaaca	gtccacagaa	300
agcctcacac	tcagcccccac	agcctcgggtg	agcccatcag	aaacagaacc	agcatcaaca	360
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caatccccac	tacgggcaac	aacgaaggcg	gtcctcagag	ccaccgcctt	tcgcacgagc	540
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aatcatgaag	aaacagggttc	agcgaaccca	caggcatctg	caagcacaat	gcaaaactag	660
cacaccaaca	ttgtaaaacc	aaattagtta	acaaaaaata	tgaaatagtt	ctaaagttaa	720
acatgtaggt	gctaacaatc	aagaaatcaa	aagacaactc	ataatctctc	taaaacagca	780
acaacatcat	gtcaactttg	ctcaaatctc	cctggggagaa	actttcgccc	ccatactgac	840
aacatcacaa	tcattctcaag	aaaagaaaact	gggcaaaaaca	gcacccaaa		888

<210> 98

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 98

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cgtgtggcac gtagcaaatg ctttaaaaat gcttctttaa tcctcatagg aataactaca 120
ctgagtatag ctctcaatat ctatctgac ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacaccag ctcaccaccc acagaatcca acaaggaagc ttcaacaatc 240
tccacagaca atccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
aaccacacac taaaccccg agcatcggtg agctcatcag aaacagaacc agcatcaaca 360
ccagacacaa caaacgcct gtctccgta gacaggtcca cagcacaacc aagtgaagc 420
agaacaaaga caaaaccgac agtccacaca agaaacaacc caagcacagc ttccagcaca 480
caatccccac cacgggtaac aacgaaggca atcctcagag ccaccgtctt cgcgatgagc 540
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aatcatgaag aaacagggtc agcaaactca caggcatctg caagcacaat gcaaaactag 660
cactccaaca atataaaacc aaattagtta acaaaaaata cgagatagct ctaaaagtaa 720
acatgtaggc accaacaatc aggaaattaa aagacaactc acaacctccc taaaacagca 780
acgacaccat gtcaactttg ctcaaattct tctgggagaa acttttgccc acatactaac 840
aacatcacia tcattctcaag aaaagaaact gggcaaaaca gcatccaa 888
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<210> 99

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 99

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cgtgtggcac gcagcaaatg ctttaaaaat gcttctttaa tcctcatagg aataactact 120
ctgagtatag ccttcaacat ctatctgac ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaaagaaac ttcaacaatc 240
tctatagaca actcagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tcagccccc agcctcggtg agcccatcag aaacagaacc agcatcaaca 360
tcagacacaa caaacgcct gtcttccgta gacagatcca caacacaacc aagtgaagc 420
agagcaagaa caaaaccgac agtccacaag aaaaacatcc caagtacagt ttctagaaca 480
caatccccac tacgggcaac aacgaaggcg gtcctcagag ccaccgcctt tcgcgatgagc 540
agcacaggag agggaccaac cacaacatcg gtccagtctg acagcagcac cacaacccaa 600
aatcatgaag aaacagggtc agcgaaccca caggcatctg caagcacaat gcaaaaccag 660
cacaccaaca ttgcaaaacc aaattagtta acaaaaaata tgaaatagtt ctaaaagtaa 720
acatgtaggc gccaacaatc aagaaatcaa aagacaactc acaatctccc taaaacagca 780
acaacatcat gccaaacttt ctcaaattct cctgggagaa accctcgccc ccatactgac 840
aacatcacia tcattctcaag aaaagaaact gggcaaaaca gcaccaa 888
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<210> 100

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 100

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cgtgtggcac gcagcaaatg ctttaaaaat gcttctttaa tcctcatagg aataactact 120
ctgagtatag ccttcaatat ctatctgac ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaaggaac ttcaacaatc 240
cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tctacccccc atcctcggtg agctcatcag aaacagaacc agcatcaaca 360
ccaggcataa caaacacact gtcttttgta gacagatcca caacacaacc aagtgaagc 420
agaacaaaga caaacgggac agtccacaaa aaaaacatct caagtacagt ttctagaaca 480
cagtcccccac cagggacaac agcgaaggcg gtcccagag ccaccgcctt tcgcacgagc 540
agcacaggag aaagaccaac cacaacacca gtccagcccg atagcagcac cacaacacaa 600
aatcatgaag aaacagggtc agcgaaccca caggcatccg caagcacaat gcaaaaccag 660
cacaccaaca ttgcaagacc aaattagtta acaaaaaata tgaaatagct ctaaaagtaa 720
acatgtaggc gccaacaatc aagaaatcaa aagataactc ataattctct taaaacagca 780
acaacatcat gttaaacttt ctcaaattct tctgggagaa accctcgccc ccatactggc 840
aacatcacia tcattctcaag aaaagaaact gggcaaaaca acaccaa 888
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<210> 101
 <211> 888
 <212> DNA
 <213> human metapneumo virus

<400> 101
 atggaggtga aagtagagaa cattcgagca atagacatgc tcaaagcaag agtgaaaaat 60
 cgtgtggcac gcagcaaata ctttaaaaaat gcttcttttaa tcctcatagg aataactact 120
 ctgagtatac ccctcaatat ctatctgata ataaactaca caatacaaaa aaccacatct 180
 gaatcagaac accacactag ctcaccaccc acagaatcta acaaggaaac ttcaacaatc 240
 cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccgcagaa 300
 agcctcacac tctaccccac atcctcgggtg agctcatcag aaacagaacc agcatcaaca 360
 ccaggcataa caaaccacct gtcctttgtg gacagatcca caacacaacc aagtgaagc 420
 agaacaaaga caaaccggac agtccacaaa aaaaacatct caagtacagt ttctagaaca 480
 cagtccccac cagggacaac agcgaaggcg gtcccagag ccaccgcct tcgcacgagc 540
 agcacaggag aaagaccaac cacaacacca gtccagccc atagcagcac cacaacacaa 600
 aatcatgaag aaacaggctc agcgaaccca caggcatccg caagcacaat gcaaaaccag 660
 cacaccaaca ttgcaagacc aaattagtta acaaaaaata tgaaatagct cttaaagtaa 720
 acatgtaggt gccacaatc aagaaatcaa aagataactc ataactcttc taaaacatca 780
 acaacatcat gttaactttg ctcaaacttc tctgggagaa accttcgccc ccatactggc 840
 aacatcacaa tcactctcaag aaaagaaact gggcaaaaac acacccaa 888

<210> 102
 <211> 888
 <212> DNA
 <213> human metapneumo virus

<400> 102
 atggaggtga aagtagagaa tattcgagca atagacatgc tcaaagcaag agtgaaaaat 60
 cgtgtggcac gcagcaaata ctttaaaaaat gcttcttttaa tcctcatagg aataactact 120
 ctgagtatac ccctcaatat ctatctgata ataaactaca caatacaaaa aaccacatct 180
 gaatcagaac accacactag ctcaccaccc acagaatcta acaaggaaac ttcaacaatc 240
 cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
 agcctcacac tctaccccac atcctcgggtg agctcatcag aaacagaacc agcatcaaca 360
 ccaggcataa caaaccacct gtcctttgtg gacagatcca caacacaacc aagtgaagc 420
 agaacaaaga caaaccggac agtccacaaa aaaaacatct caagtacagt ttctagaaca 480
 cagtccccac cagggacaac agcgaaggcg gtcccagag ccaccgcct tcgcacgagc 540
 agcacaggag aaagaccaac cacaacacca gtccagccc atagcagcac cacaacacaa 600
 aatcatgaag aaacaggctc agcgaaccca caggcatccg caagcacaat gcaaaaccag 660
 cacaccaaca ttgcaagacc aaattagtta acaaaaaata tgaaatagct cttaaagtaa 720
 acatgtaggt gccacaatc aagaaatcaa aagataactc ataactcttc taaaacatca 780
 acaacatcat gttaactttg ctcaaacttc tctgggagaa accttcgccc ccatactggc 840
 aacatcacaa tcactctcaag aaaagaaact gggcaaaaac acacccaa 888

<210> 103
 <211> 888
 <212> DNA
 <213> human metapneumo virus

<400> 103
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 cgtgtggcac gtagcaaata ctttaaaaaat gcttcttttaa tcctcatagg aataactaca 120
 ctgagcatag ccctcaatat ctatctgata ataaactaca caatacaaca aaccacatct 180
 gaatcagaac accacaccag ctcaccaccc acagaatcca acaagggaagc ttcaacaatc 240
 tccacagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
 aacccacac tcaacccagc agcatcagcg agcccatcag aaacagaatc agcatcaaca 360
 ccagatacaa caaaccgcct gtcctcgtg gacaggtcca cggtagaacc aagtgaagc 420
 agaacaaaga caaaactgac agtccacaca agaaacaacc taagcacagc ctccagtaca 480
 caatccccac caggggcaac aacgaaggca atccgcagag ccaccaccct ccgcagagc 540
 agcacaggaa gaagaccaac cacaacacta gtccagtcg acagcagcac cacaacccaa 600

aatcatgaag	aaacaggctc	agcgaaccca	caggcatctg	caagcacaat	gcaaaaccag	660
cacaccaaca	atataaaaacc	aaattagtta	acaaaaaata	cgagatagct	ctaaagtaaa	720
acatgtaggc	accaacaatc	aagaaaccaa	aagataactc	acaatcccc	caaaacagca	780
acgacacccat	gtcagctttg	ctcaaatctc	tctggggagaa	acttttgccc	acatactaac	840
aacatcacaa	ccatctcaag	aaaagaaact	gggcaaaaca	gcatccaa		888

<210> 104

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 104

atggagggtga	aagtagagaa	cattcgagca	atagacatgc	tcaaagcaag	agtgaaaaat	60
cgtgtggcac	gtagcaaatg	ctttaaaaat	gcttctttaa	tcctcatagg	aataactaca	120
ctgagcatag	ccctcaatat	ctatctgatc	ataaactaca	caatacaaaa	aaccacatct	180
gaatcagaac	accacaccag	ctcaccaccc	acagaatcca	acaaggaagc	ttcaacaatc	240
tccacagaca	accagacat	caatccaaac	tcacagcatc	caactcaaca	gtccacagaa	300
aacccccacac	tcaacccagc	agcatcagcg	agcccatcag	aaacagaatc	agcatcaaca	360
ccagatacaa	caaaccgctt	gtcctcctga	gacagggtcca	cggtacaacc	aagtgaaaaac	420
agaacaaaga	caaaactgac	agtccacaca	agaaacaacc	taagcacagc	ctccagtaca	480
caatccccac	cacgggcaac	aacgaaggca	atccgcagag	ccaccaccct	ccgcatgagc	540
agcacaggaa	gaagaccaac	cacaacacta	gtccagtcg	acagcagcac	cacaacccaa	600
aatcatgaag	aaacaggctc	agcgaaccca	caggcatctg	caagcacaat	gcaaaaccag	660
cacaccaaca	atataaaaacc	aaattagtta	acaaaaaata	cgagatagct	ctaaagtaaa	720
acatgtaggc	accaacaatc	aagaaaccaa	aagataactc	acaatcccc	caaaacagca	780
acgacacccat	gtcagctttg	ctcaaatctc	tctggggagaa	acttttgccc	acatactaac	840
aacatcacaa	ccatctcaag	aaaagaaact	gggcaaaaca	gcatccaa		888

<210> 105

<211> 901

<212> DNA

<213> human metapneumo virus

<400> 105

atggaagtaa	gagtggagaa	cattcgagcg	atagacatgt	tcaaagcaaa	gataaaaaaac	60
cgtataagaa	gcagcagggtg	ctatagaaat	gctacactga	tccttatttg	actaacagcg	120
ttaagcatgg	cacttaatat	tttcctgatc	atcgatcatg	caacattaag	aaacatgatc	180
aaaacagaaa	actgtgctaa	catgccgtcg	gcagaaccaa	gcaaaaagac	cccaatgacc	240
tccacagcac	gcccaaacac	caaaccat	ccacagcaag	caacacagtg	gaccacagag	300
aactcaacat	ccccagtagc	aacccagag	ggccatccat	acacagggac	aactcaaaaca	360
tcagacacaa	cagctcccca	gcaaaccaca	gacaaacaca	cagcaccgct	aaaatcaacc	420
aatgaacaga	tcaccagag	aaccacagag	aaaaagacaa	tcagagcaac	aacccaaaaa	480
agggaaaaag	gaaaagaaaa	cacaaaccaa	accacaagca	cagctgcaac	ccaaacaacc	540
aacaccacca	accaaatacag	aaatgcaagt	gagacaatca	caacatccga	cagacccaga	600
actgacacca	caacccaaag	cagcgaacag	acaacccggg	caacagaccc	aagctccccc	660
ccacaccatg	catagagagg	tgcaaaactc	aaatgagcac	aacacacaaa	catcccatcc	720
aagtagttaa	caaaaaacca	caaaataacc	ttgaaaacca	aaaaaccaa	acataaaccc	780
agacccagaa	aaacatagac	accatattgga	aggttctagc	atatgcacca	atgagatggc	840
atctgttcat	gtatcaatag	caccaccatc	attcaaggaa	taagaagagg	cgaaaattta	900
a						901

<210> 106

<211> 901

<212> DNA

<213> human metapneumo virus

<400> 106

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cgtataagaa	gcagcagggtg	ctatagaaat	gctacactga	tccttatttg	actaacagcg	120
ttaagcatgg	cacttaatat	tttcctgatc	attgatcatg	caacattaag	aaacatgatc	180
aaaacagaaa	actgtgctaa	catgccatcg	gcagaaccaa	gcaaaaagac	cccaatgacc	240

tccacagcag gcccaagcac cgaacccaat ccacagcaag caacacaatg gaccacagag 300
aactcaacat ccccgagcag aaccctagag agccatccat acacagggac aacccaaaca 360
ccagacataa cagctcccca acaaacacaca gacaaacaca cagcactgcc aaaatcaacc 420
aatgaacaga tcacccagac aaccacagag aaaaagacaa ccagagcaac aacccaaaaa 480
agggaaaaag aaaaagaaaa cacaaaccaa accacaagca cagctgcaac ccaaacaacc 540
aacaccacca accaaaccag aaatgcaagt gagacaatca caacatccga cagaccaga 600
attgacacca caacccaaag cagcgatcag acaacccggg caacagaccc aagctcccca 660
ccacaccatg cacagagtgg tgcaaaaccc aaatgaacac aacacacaaa catctcatcc 720
aagtagttaa caaaaaacca caaaataacc ttgaaaacca aaaaaccaa ccacaaactt 780
agccccagaa aaacatagac actatatgga aggtttgagc atatgcacca atgaaatggg 840
atctgttcat gtatcaatag cgccaccatt atttaaggaa taagaagagg caaaaattca 900
a 901

<210> 107

<211> 860

<212> DNA

<213> human metapneumo virus

<400> 107

atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat tttcctgac atcgatcatg caacattaag aaacatgatc 180
aaaacagaaa attgtgctaa catgccgccg gcagaaccaa gcaaaaagac cccaatgacc 240
tctacagcag gcccaaacac caaacccaat ccacagcaag caacacagt gaccacggag 300
aactcaacat tcccagcagc aacctcagag ggccatctac acacagggac aactcaaaca 360
ccagacacaa cagctcctca gcaaacacaca gacaaacaca cagcactgcc aaaatcaacc 420
aatgaacaaa tcacccagac aaccacagag aaaaagacaa ccagagcaac aacccaaaga 480
agggaaaaag ggaaagaaaa cacaaaccaa accacaagca cagctgctac ccaaacaacc 540
aacaccacca accaaatcag aaatgcaagc gagacaatca caacatccga cagaccaga 600
actgactcca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccca 660
ccacatcatg cacagggaag tgcaaaaccc aaatgaacac aacacacaaa catcccatcc 720
aagtagttaa caaaaaatca gaccagagaa aacatagaca ctatatggaa ggtccgagc 780
tatgcaccga tgaaatggca tttgttcatg tatcaatagc gccaccatta ttttaaggaa 840
aagaagaggc aaaaattcaa 860

<210> 108

<211> 861

<212> DNA

<213> human metapneumo virus

<400> 108

atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat tttcctgac atcgatcatg caacattaag aaacatgatc 180
aaaacagaaa attgtgctaa catgccgccg gcagaaccaa gcagaaagac cccaatgacc 240
tccacagcag gcccaaacac caaacccaat ccacagcaag caacacagt gaccacggag 300
aactcaacat ccccgagcagc aacccagag ggccatctac acacagggac aactcaaaca 360
ccagacacaa cagctcctca gcaaacacaca gacaaacaca cagcactgcc aaaatcaacc 420
aatgaacaga tcacccagagc aaccacagag aaaaagacaa ccagagaaac aacccaaaga 480
agggaaaaag gaaaagaaaa cacaaaccaa accacaagca cagctgcaac ccaaacaacc 540
aacaccacca accaaatcag aaatgcaagc gagacaatca caacatccga cagaccaga 600
actgactcca caacccaaag cagcgaacag acaacccagg caacagaccc aagctcccca 660
gcacaccatg cacagggaag tgcaaaaccc aaatgaacac aacacacaaa catcccatcc 720
aagtagttaa caaaaaatc agaccagaa aaacacagac actatatgga aggtccgagc 780
atatgcaccg atgaaatggc atctgttcat gtatcaatag caccaccatt atttaaggaa 840
taagaagagg caaaaattca a 861

<210> 109

<211> 860

<212> DNA

<213> human metapneumo virus

<400> 109

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atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaaat gctacattga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat tttcctgac atcgatcatg caacattaag aaacatgac 180
aaaacagaaa attgtgctaa catgccaccg gcagaaccaa gcaaaaagac cccaatgacc 240
tccacagcag gcctaaacac taaacccaat ccacagcaag caacacagtg gaccacggag 300
aactcaacat ccccagcagc aacccagag ggccatctac acacagggac aactcaaac 360
ccagacacaa cagctcctca gcaaaccaca gacaagcaca cagcactgcc aaaatcaacc 420
aatgaacaga tcacccagac aaccacagag aaaaagacaa ccagagcaac aacccaaaga 480
agggaaaaag gaaaagaaaa caaaaacca accacaagca cagctgcaac ccaaacaacc 540
aacaccacca accaaatcag aaatgcaagc gagacaatca caacatccga cagaccaga 600
actgactcca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccc 660
ccacaccatg cacaggggaag tgcaaaaccc aaatgaacac aacacacaaa catcccatcc 720
aagtagttaa caaaaaatca gaccagaaa aacatagaca ctatatggaa ggtccgagca 780
tatgcaccga tgaaatggca tctgttcag tatcaatagc gccaccatta ttttaaggaat 840
aagaagaggc aaaaattcaa                                     860
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<210> 110

<211> 860

<212> DNA

<213> human metapneumo virus

<400> 110

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atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat tttcctgac atcgatcatg caacattaag aaacatgac 180
aaaacagaaa attgtgctaa catgccgccg gcagaaccaa gcaaaaagac cccaatgacc 240
tccacagcag gcccaaacac caaacccaat ccacagcaag caacacagtg gaccacggag 300
aactcaacat ccccagcagc aacccagag ggccatctac acacagggac aactcaaac 360
ccagacacaa cagctcctca gcaaaccaca gacaacaca cagcactgcc aaaatcaacc 420
aatgaacaga tcacccagac aaccacagag aaaaagacaa ccagagcaac aacccaaaga 480
agggaaaaag gaaaagaaaa caaaaacca accacaagca cagctgcaac ccaaacaacc 540
aacaccacca accaaatcag aaatgcaatt gagacaatca caacatccga cagaccaga 600
actgactcca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccc 660
ccacaccatg cacaggggaag tgcaaaaccc aaatgaacac aacacacaaa catcccatcc 720
aagtagttaa caaaaaatca gaccagaaa aacatagaca ctatatggaa ggtccgagca 780
tatgcaccga tgaaatggca tctgttcag tatcaatagc gccaccatta ttttaaggaat 840
aagaagaggc aagaattcaa                                     860
```

<210> 111

<211> 886

<212> DNA

<213> human metapneumo virus

<400> 111

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atggaagtaa gagtggagaa cattcgggca atagacatgt tcaaagcaaa aatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
ttaagtatgg cacttaatat ttttttaatc attgattatg caatgttaaa aaacatgacc 180
aaagtggaa actgtgttaa tatgccgccg gtagaaccac gcaagaagac cccaatgacc 240
tctgcagtag acttaaacac caaacccaat ccacagcagg caacacagtt ggccgcagag 300
gattcaacat ctctagcagc aacctcagag gaccatctac acacagggac aactccaaca 360
ccagatgcaa cagtctctca gcaaaccaca gacgagtaca caacattgct gagatcaacc 420
aacagacaga ccaccctaac aaccacagag aaaaagccaa cgggagcaac aacccaaaaa 480
gaaaccacaa ctcgaaactac aagcacagct gcaacccaaa cactcaacac taccaccaa 540
actagctatg tgagagaggc aaccacaaca tccgccagat ccagaaacag tgccacaact 600
caaagcagcg accaaacaac ccaggcagca gacccaagct cccaaccaca ccatacacag 660
aaaagcacia caacaacata caacacagac acatcctctc caagtagtta acaaaaaaac 720
tataaaataa tcatgaaaac cgaaaaacta gaaaagttaa tttgaactca gaaaagaaca 780
caaacactat atgaattgtt tgagcgtata tactaatgaa atagcatctg tttgtgcac 840
aataatacca tcattattta agaaataaga agaagctaaa attcaa                                     886
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<210> 112
 <211> 889
 <212> DNA
 <213> human metapneumo virus

<400> 112
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 cgtataagaa gcagcaagtgc ctatagaaat gctacactga tccttattgg actgacagca 120
 ttaagtattgg cacttaatat tttcttgatc atcgattatg caacatttaa aaacatgacc 180
 aaagtggaaac actgtgctaa tatgccgccg gtagaaccga gtaagaagac cccaatgacc 240
 tctacagtag actcaagcac cggaccgaat ccacagcaga caacacagtg gaccacagag 300
 gattcaacat ctctagcagc aacctcagag gaccatctac acacagggac aactccaaca 360
 ctagatgcaa cagttttctca gcaaaccaca gacaagcaca caacaccgct gagatcaacc 420
 aatggacaga ccaccagagc aaccacagag aaaaagccaa ccagagcaat agccaaaaaa 480
 gaaaccacaa accaaaccac aagcacagct gcaacccaaa cattcaacac caccaatcaa 540
 accagaaatg gaagagagac aaccataaca tctgccagat ccagaaacga cgccacaact 600
 caaagcagcg acaaaacaaa ccagacaaca gaccgaagct cccaaccaca tcatgcatag 660
 ataagcaciaa taacaatatg aacacaacac agacacatct tctccaagta gtttaaaaaa 720
 aactataaaa taaccatgaa aaccaaaaaa ctagaaaagt aaatttgaac tcagaaaaga 780
 acacaaacac taaatgaatt gtttgagcat atatactaata gaaatagcat ctgttcatgc 840
 atcaataata ccatcattac ttaagaataa agaagaagca aaattcaa 889

<210> 113
 <211> 885
 <212> DNA
 <213> human metapneumo virus

<400> 113
 atggaagtaa gaggaggagaa cattcgggca atagacatgt tcaaagcaaa gatgaaaaac 60
 cgtataagaa gtagcaagtgc ctatagaaat gctacactga tccttattgg attaacagca 120
 ttaagtattgg cacttaatat ttttttaatc attgattatg caatgttaaa aaacatgacc 180
 aaagtggaaac actgtgttaa tatgccgccg gtagaaccga gcaagaagac cccaatgacc 240
 tctgcagtag acttaaacac caaactcaat ccacagcagg caacacagtt gaccacagag 300
 gattcaacat ctctagcagc aacctcggag gatcatttac tcacagggac aactccaaca 360
 ccagatgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
 aacagacaga ccaccacaaac aaccacagag aaaaagccaa ccggagcaac aacccaaaaa 480
 gaaaccacaa ctgaaccac aagcacagct gcaacccaaa cactcaacac caccaccaa 540
 actgaacatg gaagagaggc aaccacaaca tccaccagat ccagaaacgg tgccacaact 600
 caaaacagcg atcaaaacaa ctagacagca gaccgaagct cccaaccaca ccatacacag 660
 aaaagcaciaa caacaacata caacacagac acatcttctc caagtagtta acaaaaaaact 720
 ataaaataac catgaaaact aaaaaactag aaaagttaat ttgaactcag aaaagaacac 780
 aaacactata tgaattgttt gagcgtatat actaatgaaa tagcatctgt ttgtgcatca 840
 ataataccat cattatttaa gaaataagaa gaagctaaaa ttcaa 885

<210> 114
 <211> 885
 <212> DNA
 <213> human metapneumo virus

<400> 114
 atggaagtaa gaggaggagaa cattcgggca atagacatgt tcaaagcaaa gatgaaaaac 60
 cgcataagaa gtagcaagtgc ctatagaaat gctacactga tccttattgg attaacagca 120
 ttaagtattgg cacttaatat ttttttaatc attgattatg caacatttaa aaacatgacc 180
 aaagtggaaac actgtgttaa tatgccgccg gtagaaccga gcaagaagac cccaatgacc 240
 ttgcagtag acttaaacac caaactcaat ccacagcagg caacacagtt gaccacagag 300
 gattcaacat ctctagcagc aacctcagag ggccatccac acacaggaac aactccaaca 360
 ccagacgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
 aacagacaga ccaccacaaac agccacagag aaaaagccaa ctggagcaac aacccaaaaa 480
 gaaaccacaa cccgaactac aagtacagct gcaacccaaa caccacacac caccaccaa 540
 accagcaatg gaagagaggc aaccacaaca tccgccaggc ccagaaacgg tgccacaact 600

caaaacagcg	atcaaataac	ccaggcagca	gactcaagct	cccaaccaca	ccatacacag	660
aaaagcacia	caacagcata	caacacagac	acatcttttc	caagtagtta	acaaaaaact	720
ataaaataac	catgaaaacc	aaaaaactag	aaaagttaat	ttgaactcag	aaaagaacac	780
aaacactata	tgaattgttt	gagcgtatat	actaatgaaa	tagcatctgt	ttgtgcatca	840
ataataccat	cattatttta	gaaataagaa	gaagctaaaa	ttcaa		885

<210> 115

<211> 886

<212> DNA

<213> human metapneumo virus

<400> 115

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cgtataagaa	gtagcaagt	ctatagaaat	gctacactga	tccttattgg	attaacagca	120
ctaagtatgg	cacttaatat	ttttttaatc	attgattatg	caacattaaa	aaacatgacc	180
aaagtggaa	actgtgttaa	tatgccgccg	gtagaaccaa	gcaagaagac	cccaatgacc	240
tctgcagtag	actcaaacac	caaaccctaat	ccacagcagg	caacacagtt	gaccacagag	300
gattctacat	cttttagcagc	aacccttagag	gaccatccac	acacagggac	aactccaaca	360
ccagatgcaa	cagtctctca	gcaaaccaca	gacgagcaca	caacactgct	gagatcaacc	420
aacagacaga	ccacccaaac	aactgcagag	aaaaagccaa	ccagggcaac	aacccaaaaa	480
gaaaccacaa	ctcgaaccac	aagcacagct	gcaaccctaaa	cactcaacac	caccaaccaa	540
actagcaatg	gaagagaggc	aaccacaaca	tctgccagat	ccagaaacaa	tgccacaact	600
caaagcagcg	atcaaacaac	ccaggcagca	gaaccaagct	cccaatcaca	acatacacag	660
aaaagcacia	caacaacata	caacacagac	acatcttctc	taagtagtta	acaaaaaaac	720
tataaaataa	ccatgaaaac	caaaaaacta	gaaaagttaa	tttgaactca	gaaaagaaca	780
caaacactat	atgaattatt	tgagcgtata	tactaatgaa	atagcatctg	tttgtgcatc	840
aataatacca	tcattatttta	agaaataaga	agaagctaaa	attcaa		886

<210> 116

<211> 887

<212> DNA

<213> human metapneumo virus

<400> 116

atggaagtaa	gagtggagaa	cattcgggca	atagacatgt	tcaaagcaaa	gatgaaaaac	60
cgtataagaa	gtagcaagt	ctatagaaat	gctacactga	tccttattgg	attatcagca	120
ctaagtatgg	cacttaatat	ttttttaatc	attgattatg	caaaatcaaa	aaacatgacc	180
agagtggaa	actgtgtcaa	tatgccgccg	gtagaaccaa	gcaagaagac	cccaatgacc	240
tctgcagtag	acttaaacac	caaaccctaat	ccacagcggg	caacacagtt	gaccacagag	300
gattcaacat	ctctagcagc	aacccttagag	ggccatctac	acacagggac	aactccaaca	360
ccagatgtaa	cagtctctca	gcaaaccaca	gacgagcaca	caacactgct	gagatcaacc	420
aacagacaga	ccacccaaac	agccgcagag	aaaaagccaa	ccagagtaac	aactaacaac	480
gaaaccataa	ctcgaaccac	aagcacagcc	gcaaccctaaa	cactcaacac	caccaaccaa	540
accaacaatg	gaagagaggc	aaccacaaca	tctgccagat	ccagaaacaa	tgccacaact	600
caaagcagcg	accaaacaac	ccaggcagca	gacccaagct	cccaatcaca	acatacacag	660
aaaagcataa	caacaacata	caacacagac	acatcttctc	caagtagtta	acaaaaaaac	720
tataaaataa	ccatgaaaac	caaaaaaact	agaaaagtta	atttgaactc	agaaaagaac	780
acaaacacta	tatgaattgt	ttgagcgtat	atactaataa	aatagcatct	gtttgtgcat	840
caataatacc	atcattatttt	aagaattaag	aagaagctaa	aattcaa		887

<210> 117

<211> 887

<212> DNA

<213> human metapneumo virus

<400> 117

atggaagtaa	gagtggagaa	cattcgggca	atagacatgt	tcaaagcaaa	gatgaaaaac	60
cgtataagaa	gtagcaagt	ctatagaaat	gctacactga	tccttattgg	attatcagca	120
ctaagtatgg	cacttaatat	ttttttaatc	attgattatg	caaaatcaaa	aacctgacc	180
agagtggaa	actgtgttaa	tatgccgccg	gtagaaccaa	gcaagaagac	cccaatgacc	240
tctgcagtag	acttaaacac	caaaccctaat	ccacagcagg	caacacagtt	gaccacagag	300

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gattcaacat ctccagcagc aaccctagag ggccatctac acacagggac aactccaaca 360
ccagatgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
aacagacaga ccacccaaac aaccgcagag aaaaagccaa ccagagcaac aacccaaaaa 480
gaaaccataa ctcgaaaccac aagcacagct gcaacccaaa cactcaacac caccaacca 540
accagcaatg gaagagagggc aaccacaaca tctgccagat ccagaaacaa tgccacaact 600
caaagcagcg accaaacaac ccaggcagca gacccaagct cccaatcaca acatacaaaag 660
aaaagcaca caacaacata caacacagac acatcttctc caagtagtta acaaaaaaac 720
tataaaataa ccatgaaaac caaaaaaact agaaaagtta atttgaactc agaaaagaac 780
acaaacacta tatgaattgt ttgagcgtat atactaatga aatagcatct gtttgtgcat 840
caataatacc atcattatatt aagaattaag aagaagctaa aattcaa 887

```

<210> 118
 <211> 886
 <212> DNA
 <213> human metapneumo virus

```

<400> 118
atggaagtaa gagtggagaa cattcgggca atagacatgt tcaaagcaaa gatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
ctaagtatgg cacttaatat ttttttaatc attgattatg caacattaaa aaacatgacc 180
aaagtggaa actgtgttaa tatgccgccc gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagtag acttaaacac caaacccaat ccacagcagg caacacagtt gaccacagag 300
gactctacat ctttagcagc aaccctagag gaccatccac acacagggac aactccaaca 360
ccagatgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
aacagacaga ccacccaaac aactgcagag aaaaagccaa ccagagcaac aacccaaaaa 480
gaaaccacaa ctcgaaaccac aagcacagct gcaacccaaa cactcaacac caccaacca 540
actagcaatg gaagagagggc aaccacaaca tctgccagat ccagaaacaa tgccacaact 600
caaagcagcg atcaaacaac ccaagcagca gaaccaaact cccaatcaca acatacacag 660
aaaagcaca caacaacata caacacagac acatcttctc taagtagtta acaaaaaaac 720
tataaaataa ccatgaaaac caaaaaacta gaaaagttaa tttgaactca gaaaggaaca 780
caaacactat atgaattatt tgagcgtata tactaatgaa atagcatctg tttgtgcatc 840
aataatacca tcattattta agaaataaga agaagctaaa attcaa 886

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<210> 119
 <211> 236
 <212> PRT
 <213> human metapneumo virus

```

<400> 119
Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
1          5          10          15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20          25          30
Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35          40          45
Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
50          55          60
His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
65          70          75          80
Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
85          90          95
Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
100          105          110
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asn Arg Pro Pro
115          120          125
Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr
130          135          140
Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Thr Ser Ser Arg Thr
145          150          155          160
His Ser Pro Pro Arg Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr
165          170          175

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Leu	Arg	Thr	Ser	Ser	Thr	Arg	Lys	Arg	Pro	Ser	Thr	Ala	Ser	Val	Gln
			180					185					190		
Pro	Asp	Ile	Ser	Ala	Thr	Thr	His	Lys	Asn	Glu	Glu	Ala	Ser	Pro	Ala
		195					200					205			
Ser	Pro	Gln	Thr	Ser	Ala	Ser	Thr	Thr	Arg	Ile	Gln	Arg	Lys	Ser	Val
	210					215					220				
Glu	Ala	Asn	Thr	Ser	Thr	Thr	Tyr	Asn	Gln	Thr	Ser				
225					230					235					

<210> 120
 <211> 236
 <212> PRT
 <213> human metapneumo virus

Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Thr	Ile	Asp	Met	Leu	Lys	Ala
1				5					10					15	
Ser	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
			20					25					30		
Leu	Val	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
	35					40					45				
Leu	Ile	Ile	Asn	Tyr	Lys	Met	Gln	Lys	Asn	Thr	Ser	Glu	Ser	Glu	His
	50					55					60				
His	Thr	Ser	Ser	Ser	Pro	Met	Glu	Ser	Ser	Arg	Glu	Thr	Pro	Thr	Val
65					70					75				80	
Pro	Thr	Asp	Asn	Ser	Asp	Thr	Asn	Ser	Ser	Pro	Gln	His	Pro	Thr	Gln
			85						90					95	
Gln	Ser	Thr	Glu	Gly	Ser	Thr	Leu	Tyr	Phe	Ala	Ala	Ser	Ala	Ser	Ser
			100					105					110		
Pro	Glu	Thr	Glu	Pro	Thr	Ser	Thr	Pro	Asp	Thr	Thr	Asn	Arg	Pro	Pro
	115						120					125			
Phe	Val	Asp	Thr	His	Thr	Thr	Pro	Pro	Ser	Ala	Ser	Arg	Thr	Lys	Thr
	130					135					140				
Ser	Pro	Ala	Val	His	Thr	Lys	Asn	Asn	Pro	Arg	Thr	Ser	Ser	Arg	Thr
145					150					155				160	
His	Ser	Pro	Pro	Arg	Ala	Thr	Thr	Arg	Thr	Ala	Arg	Arg	Thr	Thr	Thr
			165						170					175	
Leu	Arg	Thr	Ser	Ser	Thr	Arg	Lys	Arg	Pro	Ser	Thr	Ala	Ser	Val	Gln
			180					185					190		
Pro	Asp	Ile	Ser	Ala	Thr	Thr	His	Lys	Asn	Glu	Glu	Ala	Ser	Pro	Ala
	195						200					205			
Ser	Pro	Gln	Thr	Ser	Ala	Ser	Thr	Thr	Arg	Ile	Gln	Arg	Lys	Ser	Val
	210					215					220				
Glu	Ala	Asn	Thr	Ser	Thr	Thr	Tyr	Asn	Gln	Thr	Ser				
225					230					235					

<210> 121
 <211> 236
 <212> PRT
 <213> human metapneumo virus

Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Thr	Ile	Asp	Met	Leu	Lys	Ala
1				5					10					15	
Arg	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
			20					25					30		
Leu	Val	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
	35					40					45				
Leu	Ile	Ile	Asn	Tyr	Lys	Met	Gln	Lys	Asn	Thr	Ser	Glu	Ser	Glu	His

50		55		60	
His Thr Ser Ser Ser	Pro Met Glu Ser Ser	Arg Glu Thr Pro Thr Val			
65	70	75	80		
Pro Thr Asp Asn Ser	Asp Thr Asn Ser Ser	Pro Gln His Pro Thr Gln			
	85	90	95		
Gln Ser Thr Glu Gly	Ser Thr Leu Tyr Phe	Ala Ala Ser Ala Asn Ser			
	100	105	110		
Pro Glu Thr Glu Pro	Thr Ser Thr Pro Asp	Thr Thr Asn Arg Pro Pro			
	115	120	125		
Phe Val Asp Thr His	Thr Thr Pro Pro Ser	Ala Ser Arg Thr Lys Thr			
	130	135	140		
Ser Pro Ala Val His	Thr Lys Asn Asn Pro	Arg Ile Ser Ser Arg Thr			
145	150	155	160		
His Ser Pro Pro Trp	Ala Thr Thr Arg Thr	Ala Arg Arg Thr Thr Thr			
	165	170	175		
Leu Arg Thr Ser Ser	Thr Arg Lys Arg Pro	Ser Thr Ala Ser Ala Gln			
	180	185	190		
Pro Asp Ile Ser Ala	Thr Thr His Lys Asn	Glu Glu Ala Ser Pro Ala			
	195	200	205		
Ser Pro Gln Thr Ser	Ala Ser Thr Thr Arg	Thr Gln Arg Lys Ser Val			
	210	215	220		
Glu Ala Asn Thr Ser	Thr Thr Tyr Asn Gln	Thr Ser			
225	230	235			

<210> 122

<211> 236

<212> PRT

<213> human metapneumo virus

<400> 122

Met Glu Val Lys Val	Glu Asn Ile Arg Thr	Ile Asp Met Leu Lys Ala
1	5	10
Arg Val Lys Asn Arg	Val Ala Arg Ser Lys	Cys Phe Lys Asn Ala Ser
	20	25
Leu Val Leu Ile Gly	Ile Thr Thr Leu Ser	Ile Ala Leu Asn Ile Tyr
	35	40
Leu Ile Ile Asn Tyr	Lys Met Gln Lys Asn	Thr Ser Glu Ser Glu His
	50	55
His Thr Ser Ser Ser	Pro Met Glu Ser Ser	Arg Glu Thr Pro Thr Val
65	70	75
Pro Thr Asp Asn Ser	Asp Thr Asn Ser Ser	Pro Gln His Pro Thr Gln
	85	90
Gln Ser Thr Glu Gly	Ser Thr Leu Tyr Phe	Ala Ala Ser Ala Asn Ser
	100	105
Pro Glu Thr Glu Pro	Thr Ser Thr Pro Asp	Thr Thr Asp Arg Pro Pro
	115	120
Phe Val Asp Thr His	Thr Thr Pro Pro Ser	Ala Ser Arg Thr Lys Thr
	130	135
Ser Pro Ala Val His	Thr Lys Asn Asn Pro	Arg Ile Ser Ser Arg Thr
145	150	155
His Ser Pro Pro Trp	Ala Thr Thr Arg Thr	Ala Arg Arg Thr Thr Thr
	165	170
Leu Arg Thr Ser Ser	Thr Arg Lys Arg Pro	Ser Thr Ala Ser Val Gln
	180	185
Pro Asp Ile Ser Ala	Thr Thr His Lys Asn	Glu Glu Ala Ser Pro Ala
	195	200
Ser Pro Gln Thr Ser	Ala Ser Thr Thr Arg	Thr Gln Arg Lys Ser Val
	210	215
Glu Ala Asn Thr Ser	Thr Thr Tyr Asn Gln	Thr Ser
225	230	235

<210> 123
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 123
 Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asp Arg Pro Pro
 115 120 125
 Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr
 130 135 140
 Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Ile Ser Ser Arg Thr
 145 150 155 160
 His Ser Pro Pro Trp Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr
 165 170 175
 Leu Arg Thr Ser Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Val Gln
 180 185 190
 Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Glu Ala Ser Pro Ala
 195 200 205
 Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Thr Gln Arg Lys Ser Val
 210 215 220
 Glu Ala Asn Thr Ser Thr Thr Tyr Asn Gln Thr Ser
 225 230 235

<210> 124
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 124
 Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Met Gln Glu Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Ile Asp Asn Ser Asp Thr Asn Pro Gly Ser Gln Tyr Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Asp Ser Thr Leu His Ser Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Ser Arg Pro Pro


```

Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
1      5      10      15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20      25      30
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35      40      45
Leu Ile Ile Asn Tyr Thr Met Gln Glu Asn Thr Ser Glu Ser Glu His
50      55      60
His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
65      70      75      80
Pro Met Asp Asn Ser Asp Thr Asn Pro Gly Ser Gln Tyr Pro Thr Gln
85      90      95
Gln Ser Thr Glu Gly Ser Thr Leu His Phe Ala Ala Ser Ala Ser Ser
100      105      110
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Ser Arg Pro Pro
115      120      125
Phe Val Asp Thr His Thr Thr Pro Ser Ser Ala Ser Arg Ile Arg Thr
130      135      140
Ser Pro Ala Val His Thr Lys Asn Asn Leu Arg Ile Ser Pro Arg Thr
145      150      155      160
His Ser Pro Pro Trp Ala Met Thr Arg Thr Val Arg Gly Thr Thr Thr
165      170      175
Leu Arg Thr Ser Ser Ile Arg Lys Arg Pro Ser Thr Ala Ser Val Gln
180      185      190
Pro Asp Ser Ser Ala Thr Thr His Lys His Glu Glu Ala Ser Pro Val
195      200      205
Ser Pro Gln Ala Ser Ala Ser Thr Ala Arg Pro Gln Arg Lys Gly Met
210      215      220
Glu Ala Ser Thr Ser Thr Thr Tyr Asn Gln Thr Ser
225      230      235

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<210> 127

<211> 228

<212> PRT

<213> Human metapneumo virus

<220>

<221> VARIANT

<222> 220

<223> Xaa = unknown amino acid or other

<400> 127

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Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
1      5      10      15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20      25      30
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35      40      45
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
50      55      60
His Thr Ser Ser Pro Pro Thr Glu Pro Asn Lys Glu Ala Ser Thr Ile
65      70      75      80
Ser Thr Asp Asn Pro Asp Ile Asn Pro Ser Ser Gln His Pro Thr Gln
85      90      95
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro
100      105      110
Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser
115      120      125
Ser Val Asp Arg Ser Thr Ala Gln Pro Ser Glu Ser Arg Thr Lys Thr
130      135      140

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Lys Pro Thr Val His Thr Ile Asn Asn Pro Asn Thr Ala Ser Ser Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Thr Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr
 165 170 175
 Phe Arg Met Ser Ser Thr Gly Lys Arg Pro Thr Thr Thr Leu Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Xaa His Thr Asn Asn
 210 215 220
 Ile Lys Pro Asn
 225

<210> 128

<211> 228

<212> PRT

<213> human metapneumo virus

<400> 128

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Pro Thr Leu Asn Pro Ala Ala Ser Val Ser Pro
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Lys Pro Thr Val His Thr Lys Asn Asn Pro Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Leu Arg Ala Thr Thr Lys Ala Val Leu Arg Ala Thr Ala
 165 170 175
 Phe Arg Thr Ser Ser Thr Arg Lys Arg Pro Thr Thr Thr Ser Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Ser Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Ser Gln His Thr Asn Asn
 210 215 220
 Ile Lys Pro Asn
 225

<210> 129

<211> 228

<212> PRT

<213> human metapneumo virus

<400> 129

Met Glu Val Lys Val Glu Asn Ile Arg Ala Val Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser

		20					25				30				
Leu	Ile	Leu	Val	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
		35					40					45			
Leu	Ile	Val	Asn	Tyr	Thr	Ile	Gln	Lys	Thr	Thr	Ser	Glu	Ser	Glu	His
		50					55					60			
His	Thr	Ser	Ser	Ser	Pro	Thr	Glu	Ser	Asn	Lys	Gly	Thr	Ser	Thr	Ile
65					70				75						80
Pro	Thr	Asp	Asn	Pro	Asp	Ile	Asn	Pro	Asn	Ser	Gln	His	Pro	Thr	Gln
				85					90					95	
Gln	Ser	Thr	Glu	Ser	Pro	Thr	Leu	Asn	Thr	Ala	Ala	Ser	Val	Ser	Pro
			100					105					110		
Ser	Glu	Thr	Glu	Pro	Ala	Ser	Thr	Pro	Asp	Thr	Thr	Asn	Arg	Leu	Ser
			115					120					125		
Ser	Ala	Asp	Arg	Ser	Thr	Thr	Gln	Pro	Ser	Glu	Ser	Arg	Thr	Lys	Thr
			130				135					140			
Lys	Leu	Thr	Val	His	Thr	Lys	Asn	Asn	Leu	Ser	Thr	Ala	Ser	Arg	Thr
145					150					155					160
Gln	Ser	Pro	Pro	Arg	Ala	Thr	Thr	Lys	Ala	Val	Leu	Arg	Asp	Thr	Ala
				165					170					175	
Phe	His	Thr	Ser	Ser	Thr	Gly	Lys	Arg	Pro	Thr	Thr	Thr	Ser	Val	Gln
			180					185						190	
Ser	Gly	Ser	Ser	Thr	Thr	Thr	Gln	Asn	His	Glu	Glu	Thr	Ser	Ser	Ser
			195				200					205			
Asn	Pro	Gln	Ala	Ser	Ala	Ser	Thr	Met	Gln	Asp	Gln	Asp	Thr	Asn	Asn
		210					215				220				
Thr	Lys	Gln	Asn												
225															

<210> 130
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<220>
 <221> VARIANT
 <222> 81
 <223> Xaa = Any Amino Acid

<400> 130															
Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Ala	Val	Asp	Met	Leu	Lys	Ala
1				5					10					15	
Arg	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
			20					25					30		
Leu	Ile	Leu	Val	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
		35					40					45			
Leu	Ile	Val	Asn	Tyr	Thr	Ile	Gln	Lys	Thr	Thr	Ser	Glu	Ser	Glu	His
		50					55					60			
His	Thr	Ser	Ser	Ser	Pro	Thr	Glu	Ser	Asn	Lys	Gly	Thr	Ser	Thr	Ile
65					70					75					80
Xaa	Thr	Asp	Asn	Pro	Asp	Ile	Asn	Pro	Asn	Ser	Gln	His	Pro	Thr	Gln
				85					90					95	
Gln	Ser	Thr	Glu	Ser	Pro	Thr	Leu	Asn	Thr	Ala	Ala	Ser	Val	Ser	Pro
			100					105					110		
Ser	Glu	Thr	Glu	Pro	Ala	Ser	Thr	Pro	Asp	Thr	Thr	Asn	Arg	Leu	Ser
			115					120					125		
Ser	Ala	Asp	Arg	Ser	Thr	Thr	Gln	Pro	Ser	Glu	Ser	Arg	Thr	Lys	Thr
			130				135					140			
Lys	Leu	Thr	Val	His	Thr	Lys	Asn	Asn	Leu	Ser	Thr	Ala	Ser	Arg	Thr
145					150					155					160
Gln	Ser	Pro	Pro	Arg	Ala	Thr	Thr	Lys	Ala	Val	Leu	Arg	Asp	Thr	Ala

				165					170					175			
Phe	His	Thr	Ser	Thr	Gly	Lys	Arg	Pro	Thr	Thr	Thr	Ser	Val	Gln			
			180				185					190					
Ser	Gly	Ser	Ser	Thr	Thr	Thr	Gln	Asn	His	Glu	Glu	Thr	Ser	Ser	Ser		
		195				200						205					
Asn	Pro	Gln	Ala	Ser	Ala	Ser	Thr	Met	Gln	Asp	Gln	Asp	Thr	Asn	Asn		
	210					215					220						
Thr	Lys	Gln	Asn														
225																	

<210> 131
 <211> 228
 <212> PRT
 <213> Human metapneumo virus

<220>
 <221> VARIANT
 <222> 220
 <223> Xaa = unknown amino acid or other

<400> 131																	
Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Leu	Lys	Ala		
1				5					10					15			
Arg	Met	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser		
			20					25					30				
Leu	Ile	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr		
		35				40						45					
Leu	Ile	Ile	Asn	Tyr	Thr	Ile	Gln	Lys	Thr	Thr	Ser	Glu	Ser	Glu	His		
	50					55					60						
His	Thr	Ser	Ser	Pro	Pro	Thr	Glu	Ser	Asn	Lys	Glu	Thr	Ser	Thr	Ile		
65					70				75						80		
Pro	Ile	Asp	Asn	Pro	Asp	Ile	Asn	Pro	Asn	Ser	Gln	His	Pro	Thr	Gln		
				85				90						95			
Gln	Ser	Thr	Glu	Ser	Leu	Thr	Leu	Asn	Pro	Ala	Ala	Ser	Val	Ser	Pro		
			100					105					110				
Ser	Glu	Thr	Glu	Pro	Ala	Ser	Thr	Pro	Asp	Thr	Thr	Asn	Arg	Leu	Ser		
		115					120					125					
Ser	Val	Asp	Arg	Ser	Thr	Thr	Gln	Pro	Ser	Glu	Ser	Arg	Thr	Lys	Thr		
		130				135					140						
Lys	Leu	Thr	Val	His	Lys	Lys	Asn	Ile	Pro	Ser	Thr	Val	Ser	Arg	Thr		
145					150				155						160		
Gln	Ser	Ser	Ile	Arg	Ala	Thr	Thr	Lys	Ala	Val	Leu	Arg	Ala	Thr	Ala		
				165				170						175			
Phe	Arg	Thr	Ser	Ser	Thr	Gly	Glu	Arg	Pro	Thr	Thr	Thr	Ser	Val	Gln		
			180					185					190				
Ser	Asp	Ser	Ser	Thr	Thr	Thr	Gln	Asn	His	Glu	Glu	Thr	Gly	Ser	Ala		
		195				200						205					
Asn	Pro	Gln	Ala	Ser	Ala	Ser	Thr	Met	Gln	Asn	Xaa	His	Thr	Asn	Ile		
	210					215					220						
Val	Lys	Pro	Asn														
225																	

<210> 132
 <211> 228
 <212> PRT
 <213> Human metapneumovirus

<220>
 <221> VARIANT

<222> 220
 <223> Xaa = unknown amino acid or other

<400> 132

Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Leu	Lys	Ala
1				5					10					15	
Arg	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
		35				40						45			
Leu	Ile	Ile	Asn	Tyr	Thr	Ile	Gln	Lys	Thr	Thr	Ser	Glu	Ser	Glu	His
	50					55					60				
His	Thr	Ser	Ser	Pro	Pro	Thr	Glu	Ser	Asn	Lys	Glu	Thr	Ser	Thr	Ile
65					70					75					80
Ser	Ile	Asp	Asn	Pro	Asp	Ile	Asn	Pro	Asn	Ser	Gln	His	Pro	Thr	Gln
			85						90					95	
Gln	Ser	Thr	Glu	Ser	Leu	Thr	Leu	Ser	Pro	Thr	Ala	Ser	Val	Ser	Pro
			100					105					110		
Ser	Glu	Thr	Glu	Pro	Ala	Ser	Thr	Ser	Asp	Thr	Thr	Ser	Arg	Leu	Ser
		115					120					125			
Ser	Val	Asp	Arg	Ser	Thr	Thr	Gln	Pro	Ser	Glu	Ser	Arg	Ala	Arg	Thr
	130					135					140				
Lys	Pro	Thr	Val	His	Lys	Lys	Asn	Ile	Pro	Ser	Thr	Val	Ser	Arg	Thr
145					150					155					160
Gln	Ser	Pro	Leu	Arg	Ala	Thr	Thr	Lys	Ala	Val	Leu	Arg	Ala	Thr	Ala
			165						170					175	
Phe	Arg	Thr	Ser	Ser	Thr	Gly	Glu	Gly	Pro	Thr	Thr	Thr	Ser	Val	Gln
		180						185					190		
Ser	Asp	Ser	Ser	Thr	Thr	Thr	Gln	Asn	His	Glu	Glu	Thr	Gly	Ser	Ala
	195					200						205			
Asn	Pro	Gln	Ala	Ser	Ala	Ser	Thr	Met	Gln	Asn	Xaa	His	Thr	Asn	Ile
	210					215					220				
Val	Lys	Pro	Asn												
225															

<210> 133
 <211> 228
 <212> PRT
 <213> Human metapneumovirus

<220>
 <221> VARIANT
 <222> 220
 <223> Xaa = unknown amino acid or other

<400> 133

Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Leu	Lys	Ala
1				5					10					15	
Arg	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
		35				40						45			
Leu	Ile	Ile	Asn	Tyr	Thr	Ile	Gln	Lys	Thr	Thr	Ser	Glu	Ser	Glu	His
	50					55					60				
His	Thr	Ser	Ser	Pro	Pro	Thr	Glu	Ser	Asn	Lys	Glu	Ala	Ser	Thr	Ile
65					70					75					80
Ser	Thr	Asp	Asn	Pro	Asp	Ile	Asn	Pro	Asn	Ser	Gln	His	Pro	Thr	Gln
			85						90					95	
Gln	Ser	Thr	Glu	Asn	Pro	Thr	Leu	Asn	Pro	Ala	Ala	Ser	Val	Ser	Ser
			100					105					110		

Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Ala Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Lys Pro Thr Val His Thr Arg Asn Asn Pro Ser Thr Ala Ser Ser Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Val Thr Thr Lys Ala Ile Leu Arg Ala Thr Val
 165 170 175
 Phe Arg Met Ser Ser Thr Gly Lys Arg Pro Ala Thr Thr Leu Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Ser Gln Ala Ser Ala Ser Thr Met Gln Asn Xaa His Ser Asn Asn
 210 215 220
 Ile Lys Pro Asn
 225

<210> 134
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 134
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Ser Ile Asp Asn Ser Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Leu Thr Leu Ser Pro Thr Ala Ser Val Ser Pro
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Ser Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Ala Arg Thr
 130 135 140
 Lys Pro Thr Val His Lys Lys Asn Ile Pro Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Leu Arg Ala Thr Thr Lys Ala Val Leu Arg Ala Thr Ala
 165 170 175
 Phe Arg Met Ser Ser Thr Gly Glu Gly Pro Thr Thr Thr Ser Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Lys Pro Asn
 225

<210> 135
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 135

```
Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1          5          10          15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
          20          25          30
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
          35          40          45
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
          50          55          60
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
65          70          75          80
Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
          85          90          95
Gln Ser Thr Glu Ser Leu Thr Leu Tyr Pro Thr Ser Ser Val Ser Ser
          100          105          110
Ser Glu Thr Glu Pro Ala Ser Thr Pro Gly Ile Thr Asn His Leu Ser
          115          120          125
Phe Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
          130          135          140
Asn Arg Thr Val His Lys Lys Asn Ile Ser Ser Thr Val Ser Arg Thr
145          150          155          160
Gln Ser Pro Pro Arg Thr Thr Ala Lys Ala Val Pro Arg Ala Thr Ala
          165          170          175
Leu Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Thr Pro Val Gln
          180          185          190
Pro Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
          195          200          205
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
          210          215          220
Ala Arg Pro Asn
225
```

<210> 136

<211> 228

<212> PRT

<213> human metapneumo virus

<400> 136

```
Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1          5          10          15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
          20          25          30
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
          35          40          45
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
          50          55          60
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
65          70          75          80
Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
          85          90          95
Gln Ser Ala Glu Ser Leu Thr Leu Tyr Pro Thr Ser Ser Val Ser Ser
          100          105          110
Ser Glu Thr Glu Pro Ala Ser Thr Pro Gly Ile Thr Asn His Leu Ser
          115          120          125
Phe Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
          130          135          140
Asn Arg Thr Val His Lys Lys Asn Ile Ser Ser Thr Val Ser Arg Thr
145          150          155          160
Gln Ser Pro Pro Arg Thr Thr Ala Lys Ala Val Pro Arg Ala Thr Ala
          165          170          175
```


Leu Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Thr Pro Val Gln
 180 185 190
 Pro Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Arg Pro Asn
 225

<210> 137
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 137
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Leu Thr Leu Tyr Pro Thr Ser Ser Val Ser Ser
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Gly Ile Thr Asn His Leu Ser
 115 120 125
 Phe Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Asn Arg Thr Val His Lys Lys Asn Ile Ser Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Thr Thr Ala Lys Ala Val Pro Arg Ala Thr Ala
 165 170 175
 Leu Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Thr Pro Val Gln
 180 185 190
 Pro Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Arg Pro Asn
 225

<210> 138
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 138
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Gln Thr Thr Ser Glu Ser Glu His

50		55		60
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Ala Ser Thr Ile				
65		70		80
Ser Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln				
	85		90	95
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro				
	100		105	110
Ser Glu Thr Glu Ser Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser				
	115		120	125
Ser Val Asp Arg Ser Thr Val Gln Pro Ser Glu Asn Arg Thr Lys Thr				
	130		135	140
Lys Leu Thr Val His Thr Arg Asn Asn Leu Ser Thr Ala Ser Ser Thr				
145		150		155
Gln Ser Pro Pro Arg Ala Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr				
	165		170	175
Leu Arg Met Ser Ser Thr Gly Arg Arg Pro Thr Thr Thr Leu Val Gln				
	180		185	190
Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala				
	195		200	205
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Asn				
	210		215	220
Ile Lys Pro Asn				
225				

<210> 139

<211> 228

<212> PRT

<213> human metapneumo virus

<400> 139

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala		
1	5	10
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser		
	20	25
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr		
	35	40
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His		
	50	55
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Ala Ser Thr Ile		
65	70	75
Ser Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln		
	85	90
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro		
	100	105
Ser Glu Thr Glu Ser Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser		
	115	120
Ser Val Asp Arg Ser Thr Val Gln Pro Ser Glu Asn Arg Thr Lys Thr		
	130	135
Lys Leu Thr Val His Thr Arg Asn Asn Leu Ser Thr Ala Ser Ser Thr		
145	150	155
Gln Ser Pro Pro Arg Ala Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr		
	165	170
Leu Arg Met Ser Ser Thr Gly Arg Arg Pro Thr Thr Thr Leu Val Gln		
	180	185
Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala		
	195	200
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Asn		
	210	215
Ile Lys Pro Asn		
225		

<210> 140
 <211> 231
 <212> PRT
 <213> Human metapneumo virus

<220>
 <221> VARIANT
 <222> 225
 <223> Xaa = unknown amino acid or other

<400> 140
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Ser Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Ser Pro Val Ala Thr Pro Glu Gly His
 100 105 110
 Pro Tyr Thr Gly Thr Thr Gln Thr Ser Asp Thr Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Pro Leu Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Thr Glu Lys Lys Thr Ile Arg Ala Thr Thr Gln Lys
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Thr Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Xaa Arg Gly Ala Lys Leu Lys
 225 230

<210> 141
 <211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 141
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Ser Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80

Ser Thr Ala Gly Pro Ser Thr Glu Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Ser Pro Ala Ala Thr Leu Glu Ser His
 100 105 110
 Pro Tyr Thr Gly Thr Thr Gln Thr Pro Asp Ile Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Leu Pro Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Lys
 145 150 155 160
 Arg Glu Lys Glu Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Thr Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Ile Asp Thr Thr Thr Gln Ser Ser
 195 200 205
 Asp Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Gln Ser Gly Ala Lys Pro Lys
 225 230

<210> 142
 <211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 142
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Pro Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Phe Pro Ala Ala Thr Ser Glu Gly His
 100 105 110
 Leu His Thr Gly Thr Thr Gln Thr Pro Asp Thr Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Leu Pro Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Arg
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Ser Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Gln Gly Ser Ala Lys Pro Lys
 225 230

<210> 143

<211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 143

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5					10					15	
Lys	Ile	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Arg	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
		35					40					45			
Leu	Ile	Ile	Asp	His	Ala	Thr	Leu	Arg	Asn	Met	Ile	Lys	Thr	Glu	Asn
	50					55				60					
Cys	Ala	Asn	Met	Pro	Pro	Ala	Glu	Pro	Ser	Arg	Lys	Thr	Pro	Met	Thr
65					70					75					80
Ser	Thr	Ala	Gly	Pro	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Trp	Thr	Thr	Glu	Asn	Ser	Thr	Ser	Pro	Ala	Ala	Thr	Pro	Glu	Gly	His
			100					105					110		
Leu	His	Thr	Gly	Thr	Thr	Gln	Thr	Pro	Asp	Thr	Thr	Ala	Pro	Gln	Gln
		115					120					125			
Thr	Thr	Asp	Lys	His	Thr	Ala	Leu	Pro	Lys	Ser	Thr	Asn	Glu	Gln	Ile
		130					135				140				
Thr	Gln	Ala	Thr	Thr	Glu	Lys	Lys	Thr	Thr	Arg	Glu	Thr	Thr	Gln	Arg
145					150					155					160
Arg	Glu	Lys	Gly	Lys	Glu	Asn	Thr	Asn	Gln	Thr	Thr	Ser	Thr	Ala	Ala
				165					170					175	
Thr	Gln	Thr	Thr	Asn	Thr	Thr	Asn	Gln	Ile	Arg	Asn	Ala	Ser	Glu	Thr
			180					185					190		
Ile	Thr	Thr	Ser	Asp	Arg	Pro	Arg	Thr	Asp	Ser	Thr	Thr	Gln	Ser	Ser
		195					200					205			
Glu	Gln	Thr	Thr	Gln	Ala	Thr	Asp	Pro	Ser	Ser	Pro	Ala	His	His	Ala
		210				215					220				
Gln	Gly	Ser	Ala	Lys	Pro	Lys									
225						230									

<210> 144
 <211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 144

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5					10					15	
Lys	Ile	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Arg	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
		35					40					45			
Leu	Ile	Ile	Asp	His	Ala	Thr	Leu	Arg	Asn	Met	Ile	Lys	Thr	Glu	Asn
	50					55				60					
Cys	Ala	Asn	Met	Pro	Pro	Ala	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
65					70					75					80
Ser	Thr	Ala	Gly	Leu	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Trp	Thr	Thr	Glu	Asn	Ser	Thr	Ser	Pro	Ala	Ala	Thr	Pro	Glu	Gly	His
			100					105					110		
Leu	His	Thr	Gly	Thr	Thr	Gln	Thr	Pro	Asp	Thr	Thr	Ala	Pro	Gln	Gln
		115					120					125			
Thr	Thr	Asp	Lys	His	Thr	Ala	Leu	Pro	Lys	Ser	Thr	Asn	Glu	Gln	Ile
		130					135					140			

Thr Gln Thr Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Arg
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Ser Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Gln Gly Ser Ala Lys Pro Lys
 225 230

<210> 145
 <211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 145
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Pro Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Ser Pro Ala Ala Thr Pro Glu Gly His
 100 105 110
 Leu His Thr Gly Thr Thr Gln Thr Pro Asp Thr Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Leu Pro Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Arg
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ile Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Ser Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser His Pro His His Ala
 210 215 220
 Gln Gly Ser Ala Lys Pro Lys
 225 230

<210> 146
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 146
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Met Lys Asn Arg Ile Arg Ser Ser Lys Cys Tyr Arg Asn Ala Thr

				165					170					175			
Thr	Thr	Asn	Gln	Thr	Arg	Asn	Gly	Arg	Glu	Thr	Thr	Ile	Thr	Ser	Ala		
			180					185					190				
Arg	Ser	Arg	Asn	Asp	Ala	Thr	Thr	Gln	Ser	Ser	Glu	Gln	Thr	Asn	Gln		
		195					200					205					
Thr	Thr	Asp	Pro	Ser	Ser	Gln	Pro	His	His	Ala	Xaa	Ile	Ser	Thr	Ile		
	210					215					220						
Thr	Ile	Xaa	Thr	Gln	His	Arg	His	Ile	Phe	Ser	Lys						
225					230					235							

<210> 148
 <211> 236
 <212> PRT
 <213> Human metapneumo virus

<220>
 <221> VARIANT
 <222> 208
 <223> Xaa = unknown amino acid or other

<400> 148																	
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1				5					10					15			
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr		
			20					25					30				
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe		
		35					40					45					
Leu	Ile	Ile	Asp	Tyr	Ala	Met	Leu	Lys	Asn	Met	Thr	Lys	Val	Glu	His		
	50					55					60						
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr		
65					70					75					80		
Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Leu	Asn	Pro	Gln	Gln	Ala	Thr	Gln		
			85					90					95				
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Ser	Glu	Asp	His		
			100					105					110				
Leu	Leu	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln		
	115						120					125					
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr		
	130					135					140						
Thr	Gln	Thr	Thr	Thr	Glu	Lys	Lys	Pro	Thr	Gly	Ala	Thr	Thr	Lys	Lys		
145					150					155					160		
Glu	Thr	Thr	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn		
			165					170					175				
Thr	Thr	Asn	Gln	Thr	Ser	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Thr		
		180						185					190				
Arg	Ser	Arg	Asn	Gly	Ala	Thr	Thr	Gln	Asn	Ser	Asp	Gln	Thr	Thr	Xaa		
		195					200					205					
Thr	Ala	Asp	Pro	Ser	Ser	Gln	Pro	His	His	Thr	Gln	Lys	Ser	Thr	Thr		
	210					215					220						
Thr	Thr	Tyr	Asn	Thr	Asp	Thr	Ser	Ser	Pro	Ser	Ser						
225					230					235							

<210> 149
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 149																	
Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala		
1				5					10					15			

Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
		35					40					45			
Leu	Ile	Ile	Asp	Tyr	Ala	Thr	Leu	Lys	Asn	Met	Thr	Lys	Val	Glu	His
	50					55					60				
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
65				70						75					80
Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Leu	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Ser	Glu	Gly	His
			100					105					110		
Pro	His	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln
		115					120						125		
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr
	130					135					140				
Thr	Gln	Thr	Ala	Thr	Glu	Lys	Lys	Pro	Thr	Gly	Ala	Thr	Thr	Lys	Lys
145					150					155					160
Glu	Thr	Thr	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Pro	Asn
				165					170					175	
Thr	Thr	Asn	Gln	Thr	Ser	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Ala
		180						185					190		
Arg	Ser	Arg	Asn	Gly	Ala	Thr	Thr	Gln	Asn	Ser	Asp	Gln	Ile	Thr	Gln
		195					200					205			
Ala	Ala	Asp	Ser	Ser	Ser	Gln	Pro	His	His	Thr	Gln	Lys	Ser	Thr	Thr
	210					215					220				
Thr	Ala	Tyr	Asn	Thr	Asp	Thr	Ser	Phe	Pro	Ser	Ser				
225					230					235					

<210> 150

<211> 236

<212> PRT

<213> human metapneumo virus

<400> 150

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5					10					15	
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
		35					40					45			
Leu	Ile	Ile	Asp	Tyr	Ala	Thr	Leu	Lys	Asn	Met	Thr	Lys	Val	Glu	His
	50					55					60				
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
65				70						75					80
Ser	Ala	Val	Asp	Ser	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Leu	Glu	Asp	His
			100					105					110		
Pro	His	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln
		115					120						125		
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr
	130					135					140				
Thr	Gln	Thr	Thr	Ala	Glu	Lys	Lys	Pro	Thr	Arg	Ala	Thr	Thr	Lys	Lys
145					150					155					160
Glu	Thr	Thr	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn
				165					170					175	
Thr	Thr	Asn	Gln	Thr	Ser	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Ala
		180						185					190		
Arg	Ser	Arg	Asn	Asn	Ala	Thr	Thr	Gln	Ser	Ser	Asp	Gln	Thr	Thr	Gln

		195					200					205					
Ala	Ala	Glu	Pro	Ser	Ser	Gln	Ser	Gln	His	Thr	Gln	Lys	Ser	Thr	Thr		
	210					215					220						
Thr	Thr	Tyr	Asn	Thr	Asp	Thr	Ser	Ser	Leu	Ser	Ser						
225					230					235							

<210> 151
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 151

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala		
1				5					10					15			
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr		
			20					25					30				
Leu	Ile	Leu	Ile	Gly	Leu	Ser	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe		
		35					40					45					
Leu	Ile	Ile	Asp	Tyr	Ala	Lys	Ser	Lys	Asn	Met	Thr	Arg	Val	Glu	His		
	50					55					60						
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr		
65					70					75					80		
Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Arg	Ala	Thr	Gln		
			85					90						95			
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Leu	Glu	Gly	His		
			100					105					110				
Leu	His	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Val	Thr	Val	Ser	Gln	Gln		
	115					120						125					
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr		
	130					135						140					
Thr	Gln	Thr	Ala	Ala	Glu	Lys	Lys	Pro	Thr	Arg	Val	Thr	Thr	Asn	Lys		
145				150						155					160		
Glu	Thr	Ile	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn		
			165					170						175			
Thr	Thr	Asn	Gln	Thr	Asn	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Ala		
		180					185						190				
Arg	Ser	Arg	Asn	Asn	Ala	Thr	Thr	Gln	Ser	Ser	Asp	Gln	Thr	Thr	Gln		
		195					200					205					
Ala	Ala	Asp	Pro	Ser	Ser	Gln	Ser	Gln	His	Thr	Gln	Lys	Ser	Ile	Thr		
	210					215					220						
Thr	Thr	Tyr	Asn	Thr	Asp	Thr	Ser	Ser	Pro	Ser	Ser						
225					230					235							

<210> 152
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 152

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala		
1				5					10					15			
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr		
			20					25					30				
Leu	Ile	Leu	Ile	Gly	Leu	Ser	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe		
		35					40					45					
Leu	Ile	Ile	Asp	Tyr	Ala	Lys	Ser	Lys	Thr	Met	Thr	Arg	Val	Glu	His		
	50					55					60						
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr		
65					70					75					80		

Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
			85						90					95	
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Pro	Ala	Ala	Thr	Leu	Glu	Gly	His
			100					105					110		
Leu	His	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln
			115				120					125			
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr
			130			135					140				
Thr	Gln	Thr	Thr	Ala	Glu	Lys	Lys	Pro	Thr	Arg	Ala	Thr	Thr	Lys	Lys
145					150					155				160	
Glu	Thr	Ile	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn
				165					170					175	
Thr	Thr	Asn	Gln	Thr	Ser	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Ala
			180					185				190			
Arg	Ser	Arg	Asn	Asn	Ala	Thr	Thr	Gln	Ser	Ser	Asp	Gln	Thr	Thr	Gln
			195				200					205			
Ala	Ala	Asp	Pro	Ser	Ser	Gln	Ser	Gln	His	Thr	Lys	Lys	Ser	Thr	Thr
		210				215					220				
Thr	Thr	Tyr	Asn	Thr	Asp	Thr	Ser	Ser	Pro	Ser	Ser				
225					230					235					

<210> 153

<211> 236

<212> PRT

<213> human metapneumo virus

<400> 153

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5					10					15	
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
			35				40					45			
Leu	Ile	Ile	Asp	Tyr	Ala	Thr	Leu	Lys	Asn	Met	Thr	Lys	Val	Glu	His
			50			55					60				
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
65				70						75				80	
Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Leu	Glu	Asp	His
			100					105					110		
Pro	His	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln
			115				120					125			
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr
			130			135					140				
Thr	Gln	Thr	Thr	Ala	Glu	Lys	Lys	Pro	Thr	Arg	Ala	Thr	Thr	Lys	Lys
145					150					155				160	
Glu	Thr	Thr	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn
				165					170					175	
Thr	Thr	Asn	Gln	Thr	Ser	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Ala
			180					185					190		
Arg	Ser	Arg	Asn	Asn	Ala	Thr	Thr	Gln	Ser	Ser	Asp	Gln	Thr	Thr	Gln
			195				200					205			
Ala	Ala	Glu	Pro	Asn	Ser	Gln	Ser	Gln	His	Thr	Gln	Lys	Ser	Thr	Thr
		210				215					220				
Thr	Thr	Tyr	Asn	Thr	Asp	Thr	Ser	Ser	Leu	Ser	Ser				
225					230					235					

<210> 154

<211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 154
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 gacacgcctt gctggatagt aaaagcagcc ccttcttggt caggaaaaaa gggaaactat 120
 gcttgccctc taagagaaga ccaaggatgg tattgtcaaa atgcaggggc aactgtttac 180
 taccctaatg aaaaagactg tgaaacaaga ggagaccatg tcttttgca cacagcagca 240
 ggaatcaatg ttgctgagca gtcaaaggag tgcaacataa acatatctac tactaattac 300
 ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactatc tcctcttggg 360
 gctttggttg cttgctacaa gggagtggagc tgttccattg gcagcaacag agtagggatc 420
 atcaagcaac tgaacaaagg ctgctctta 449

<210> 155
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 155
 ataggagttt acggaagctc cgtaattttac atggtgcaac tgccaatctt tgggggttata 60
 gacacgcctt gctggatagt aaaagcagcc ccttcttggt cagaaaaaaa gggaaactat 120
 gcttgccctc taagagaaga tcaaggatgg tattgtcaga atgcaggggc aactgtttac 180
 taccctaatg aaaaagactg cgaaacaaga ggagaccatg tcttttgca cacagcagca 240
 ggaatcaatg ttgctgagca gtcaaaggag tgcaacatca acatatccac tactaattac 300
 ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactgtc tcctcttggg 360
 gctttggttg cttgctacaa gggagtggagc tgttccattg gcagcaacag agtagggatc 420
 atcaagcaac tgaacaaagg ctgctctta 449

<210> 156
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 156
 ataggagttt acggaagctc cgtaattttac atggtgcaac tgccaatctt tgggggttata 60
 gacacgcctt gctggatagt aaaagcagcc ccttcttggt cagaaaaaaa gggaaactat 120
 gcttgccctc taagagaaga tcaaggatgg tattgtcaga atgcaggggc aactgtttac 180
 taccctaatg aaaaagattg cgaaacaaga ggagaccatg tcttttgca cacagcagca 240
 ggaatcaatg ttgctgagca gtcaaaggag tgcaacatca acatatccac tactaattac 300
 ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactgtc tcctcttggg 360
 gctttggttg cttgctacaa gggagtggagc tgttccattg gcagcaacag agtagggatc 420
 atcaagcaac tgaacaaagg ctgctctta 449

<210> 157
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 157
 ataggagttt acggaagctc cgtaattttac atggtgcaac tgccaatctt tgggggttata 60
 gacacgcctt gctggatagt aaaagcagcc ccttcttggt cagaaaaaaa gggaaactat 120
 gcttgccctc taagagaaga tcaaggatgg tattgtcaga atgcaggggc aactgtttac 180
 taccctaatg aaaaagactg cgaaacaaga ggagaccatg tcttttgca cacagcagca 240
 ggaatcaatg ttgctgagca gtcaaaggag tgcaacatca acatatccac tactaattac 300
 ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactgtc tcctcttggg 360
 gctttggttg cttgctacaa gggagtggagc tgttccattg gcagcaacag agtagggatc 420
 atcaagcaac tgaacaaagg ctgctctta 449

<210> 158
 <211> 449

<212> DNA

<213> human metapneumo virus

<400> 158

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ataggagttt acggaagctc cgtaatttac atggtgcaac tgccaatctt tggggttata 60
gacacgcctt gctggatagt aaaagcagcc ccttcttgct cagaaaaaaa gggaaactat 120
gcttgccctt taagagaaga tcaaggatgg tattgtcaga atgcaggggc aactgtttac 180
taccctaatg aaaaagattg cgaaacaaga ggagaccatg tcttttgcca cacagcagca 240
ggaatcaatg ttgctgagca gtcaaaggag tgcaacatca acatatccac tactaattac 300
ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcaactgtc tctcttgagg 360
gctttggttg cttgctacaa gggagtgggc tgttccattg gtagcaacag agtagggatc 420
atcaagcaac tgaacaaagg ctgctctta 449
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<210> 159

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 159

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gcttgccctt taagagaaga ccaaggatgg tattgtcaga atgcaggggc aactgtttac 180
taccctaatg aaaaagactg tgaacaaga ggagaccatg tcttttgcca cacagcagca 240
ggaatcaatg ttgctgagca gtcaaaggag tgcaacataa acatatctac tactaattac 300
ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcaactgtc tctcttgagg 360
gctttggttg cttgctacaa gggagtgggc tgttccattg gcagcaacag agtagggatc 420
atcaagcaac tgaacaaagg ctgctctta 449
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<210> 160

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 160

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gcttgccctt taagagaaga ccaaggatgg tattgtcaga atgcaggggc aactgtttac 180
taccctaatg aaaaagactg tgaacaaga ggagaccatg tcttttgcca cacagcagca 240
ggaatcaatg ttgctgagca gtcaaaggag tgcaacataa acatatctac tactaattac 300
ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcaactgtc tctcttgagg 360
gctttggttg cttgctacaa gggagtgggc tgttccattg gcagcaacag agtagggatc 420
atcaagcaac tgaacaaagg ctgctctta 449
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<210> 161

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 161

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ataggagttt acggaagctc cgtaatttac atggtgcaac tgccaatctt tggggttata 60
gacacgcctt gctggatagt aaaagcagcc ccttcttgct cagaaaaaaa gggaaactat 120
gcttgccctt taagagaaga ccaaggatgg tattgtcaga atgcaggggc aactgtttac 180
taccctaatg aaaaagactg tgaacaaga ggagaccatg tcttttgcca cacagcagca 240
ggaatcaatg ttgctgagca gtcaaaggag tgcaacataa acatatctac tactaattac 300
ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcaactgtc tctcttgagg 360
gctttggttg cttgctacaa gggagtgggc tgttccattg gcagcaacag agtagggatc 420
atcaagcaac tgaacaaagg ctgctctta 449
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<210> 162

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 162

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ataggagttt acggaagctc cgtaatttac atggtgcaac tgccaatctt tggggttata 60
gacacgcctt gctggatagt aaaagcagcc ccttcttgct cagaaaaaaaaa gggaaactat 120
gcttgccctt taagagaaga tcagggatgg tattgtcaga atgcagggtc aactgtttac 180
taccctaaatg aaaaagactg tgaaacaaga ggagaccatg tcttttgca cacagcagca 240
ggaatcaatg ttgctgagca gtcaaaggag tgcaacatca acatatccac tactaattac 300
ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcaactgtc tcctcttggg 360
gctttggttg cttgctacaa gggagtgage tgttccattg gcagcaacag agtaggaatc 420
atcaagcaac tgaacaaagg ctgctctta 449
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<210> 163

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 163

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<210> 164

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 164

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<210> 165

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 165

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<211> 449

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<210> 171

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<213> human metapneumo virus

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<210> 174

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<210> 175

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<210> 176

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<400> 176

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<210> 177

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<400> 177

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<210> 178

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<212> DNA

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<400> 178

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<210> 179

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 179

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<211> 449

<212> DNA

<213> human metapneumo virus

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<210> 181

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 181

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<210> 182

<211> 449

<212> DNA

<213> human metapneumo virus

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<210> 183

<211> 449

<212> DNA

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<400> 183

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<210> 184

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<212> DNA

<213> human metapneumo virus

<400> 184

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<210> 185

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 185

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<210> 186

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 186

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gcttgccctt taagagaaga tcaagggtgg tattgtcaga atgcagggtc aactgtttac 180

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tacccaaatg	agaaagactg	tgaacaaga	ggagaccatg	tcttttgcga	cacagcagca	240
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ccatgcaaag	tcagcacagg	aagacatcct	atcagtatgg	ttgcactgtc	ccctcttggg	360
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<210> 187

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 187

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<213> human metapneumo virus

<400> 188

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<210> 189

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<213> human metapneumo virus

<400> 189

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gcttgccctc	taagagaaga	ccaaggggtg	tattgtcaga	atgcaggggtc	aactgtttac	180
tacccaaatg	agaaggactg	tgaacaaga	ggagaccatg	tcttttgcga	cacagcagca	240
ggaattaatg	ttgctgagca	atcaaaggag	tgcaacatca	acatatccac	cacaaattac	300
ccatgcaaag	tcagcacagg	aaggcatcct	atcagtatgg	ttgcactgtc	ccctcttggg	360
gctctggttg	cttggtacaa	aggagtaagc	tgttctattg	gcagcaatag	agtagggatc	420
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<210> 190

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 190

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gcttgccctc	taagagaaga	ccaaggggtg	tattgtcaga	atgcaggggtc	aactgtttac	180
tacccaaatg	agaagactg	tgaacaaga	ggagaccatg	tcttttgcga	cacagcagca	240

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ggaattaatg ttgctgagca atcaaaggag tgcaacatca acatatccac tacaaattac 300
ccatgcaaag tcagcacagg aagacatcct atcagtatgg ttgactgtc tcctcttggg 360
gctctggttg cttgctacaa aggagtaagc tgttccattg gcagcaacag agtagggatc 420
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<210> 191
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<212> DNA
<213> human metapneumo virus

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gcttgccctt taagagaaga ccaagggtgg tattgtcaga atgcaggggtc aactgtttac 180
taccctaatg agaaagactg tgaaacaaga ggagaccatg tcttttgcca cacagcagca 240
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<210> 192
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<213> human metapneumo virus

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<210> 193
<211> 449
<212> DNA
<213> human metapneumo virus

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<400> 193
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gctctggttg cttgctacaa aggagtaagc tgttccattg gcagcaacag agtagggatc 420
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<210> 194
<211> 449
<212> DNA
<213> human metapneumo virus

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<400> 194
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gcttgccctt taagagaaga ccaaggatgg tattgtcaga atgcaggggtc aactgtttac 180
taccctaatg agaaagactg tgaaacaaga ggagaccatg tcttttgcca cacagcagca 240
ggaattaatg ttgctgagca atcaaaggag tgcaacatca acatatccac cacaattac 300

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ccatgcaaag tcagcacagg aaggcatcct atcagtatgg ttgcaactgtc ccctctcggg 360
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atcaagcagc tgaacaaagg ttgctccta 449
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<210> 195

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 195

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gcttgccctc taagagaaga ccaagggtgg tattgtcaga atgcagggtc aactgtttac 180
taccctaatg agaaagactg tgaacaaga ggagaccatg tcttttgcca cacagcagca 240
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atcaagcagc tgaacaaagg ttgctccta 449
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<210> 196

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 196

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gcttgccctc taagagaaga ccaaggatgg tattgtcaga atgcagggtc aactgtttac 180
taccctaatg agaaagactg tgaacaaga ggagaccatg tcttttgcca cacagcagca 240
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<210> 197

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 197

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taccctaatg agaaagactg tgaacaaga ggagaccatg tcttttgcca cacagcagca 240
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ataaagcagc tgaacaaagg ttgctccta 449
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<210> 198

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 198

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gcttgccctc taagagagga tcaagggtgg tattgtataa atgcaggatc cactgtttac 180
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ccatgcaaag tcagcacagg aagacaccct ataagcatgg ttgcaactatc acctctcggg 360
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gctttggtgg cttgctataa aggggtaagc tgctcgattg gcagcaatcg gggttgaatc 420
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<210> 199

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 199

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gcttgccctcc taagagagga tcaaggggtgg tattgtaaaa atgcaggatc tactgtttac 180
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gctttggtgg cttgctataa aggggtaagc tgctcgattg gcagcaattg gggttgaatc 420
atcaacaat taccctaaagg ctgctcata 449

<210> 200

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 200

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gcttgccctcc taagagagga tcaaggggtgg tattgtaaaa atgcaggatc tactgtttac 180
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gctttggtgg cttgctataa aggggtaagc tgctcgattg gcagcaatcg gggttgaatc 420
atcaacaat taccctaaagg ctgctcata 449

<210> 201

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 201

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taccctaaatg aaaaagactg cgaaacaaga ggtgatcatg ttttttgtga cacagcagca 240
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gctttggtgg cttgctataa aggggtaagc tgctcgattg gcagcaatcg gggttgaatc 420
atcaacaat taccctaaagg ctgctcata 449

<210> 202

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 202

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gcttgccctcc taagagagga tcaaggggtgg tattgtaaaa atgcaggatc tactgtttac 180
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449

<210> 203

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<212> DNA

<213> human metapneumo virus

<400> 203

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gcttgctcc	taagagagga	tcaaggttg	tattgtaaaa	atgcaggatc	cactgtttac	180
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gggatcaatg	ttgctgagca	atcaagagaa	tgcaacatca	acatatctac	taccaactac	300
ccatgcaaag	tcagcacagg	aagacaccct	ataagcatgg	ttgcactatc	acctctcggt	360
gctttggtgg	cttgctataa	aggggtaagc	tgctcgattg	gcagcaatcg	ggttggaatc	420
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<210> 204

<211> 449

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<213> human metapneumo virus

<400> 204

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gctttggtgg	cttgctataa	aggggtaagc	tgctcgattg	gcagcaatcg	ggttggaatc	420
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<210> 205

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 205

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gctttggtgg	cttgctataa	aggggtaagc	tgctcgattg	gcagcaatcg	ggttggaatc	420
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<213> human metapneumo virus

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gctttggtgg	cttgctataa	aggggtaagc	tgctcgattg	gcagcaatcg	ggttggaatc	420
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<210> 207
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<210> 208
 <211> 449
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<210> 211
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<210> 213
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<210> 214
 <211> 449
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 <213> human metapneumo virus

<400> 214
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 gcttgctctc taagagagga tcaaggggtgg tattgtaaaa atgcaggatc cactgtttac 180
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<210> 215

<211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 215
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 gcttgctccc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
 taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga tacagcagca 240
 gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac taccaactac 300
 ccatgcaaag tcagcacagg aagacaccct ataagcatgg ttgcactatc acctctcgg 360
 gctttgggtg cttgctataa aggggtaagc tgctcgattg gcagcaatcg ggttggaatc 420
 atcaacaat taccctaaag ctgctcata 449

<210> 216
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 216
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 gcttgctccc taagagagga tcaaggggtg tactgtaaaa atgcaggatc cactgtttac 180
 taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagcagca 240
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 ccatgcaaag tcagcacagg aagacaccct ataagcatgg ttgcactatc acctctcgg 360
 gctttgggtg cttgctataa aggggtaagc tgctcgattg gcagcaatcg ggttggaatc 420
 atcaacaat tacctaaag ctgctcata 449

<210> 217
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 217
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 gcttgctccc taagagagga tcaaggggtg tattgcaaaa atgcaggatc cactgtttac 180
 taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagcagca 240
 gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac caccaactac 300
 ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcgg 360
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 atcaacaac tacctaaag ctgctcata 449

<210> 218
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 218
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 gcttgctccc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
 taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagcagca 240
 gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac caccaactac 300
 ccatgcaaag tcagcacagg aagacacccc atcagcatgg ttgcactatc acctctcgg 360
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 atcaacaac tacctaaag ctgctcata 449

<210> 219
 <211> 449

<212> DNA

<213> human metapneumo virus

<400> 219

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ataggggtct acggaagctc tgtgatttac atggtccagc tgccgatctt tgggtgtcata 60
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gcttgccctc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac caccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggtag cttgctacaa aggggttagc tgctcgattg gcagtaatcg ggttggata 420
atcaacaac tacctaaagg ctgctcata 449
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<210> 220

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 220

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ataggggtct acggaagctc cgtgatttac atggtccagc tgccgatctt tgggtgtcata 60
gatacacctt gttggataat caaggcagct ccctcttggt cagaaaaaga tggaaattat 120
gcttgccctc taagagagga ccaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac aaccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggtag cttgctacaa aggggttagc tgctcgattg gcagtaatcg ggttggata 420
atcaacaac tacctaaagg ctgctcata 449
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<210> 221

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 221

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ataggggtct acggaagctc cgtgatttac atggtccagc taccgatctt tgggtgtcata 60
gatacacctt gttggataat caaggcagct ccctcttggt cagaaaaaga tggaaattat 120
gcttgccctc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagctgca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatccac aaccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactgct acctctcggc 360
gctttggtag cttgctacaa aggggttagc tgctcgattg gcagtaatcg ggttggata 420
atcaacaac tacctaaagg ctgctcata 449
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<210> 222

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 222

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gcttgccctc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
taccctaatg aaaaagactg cgaacaaga ggtgatcatg ttttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac taccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggtag cttgctacaa aggggttagc tgctcgattg gcagtaatcg ggttggata 420
atcaacaac tacctaaagg ctgctcata 449
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<210> 223

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 223

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ataggggtct acggaagctc cgtgatttac atgggtccagc tgccgatctt tgggtgtcata 60
gatacacctt gttggataat caaggcagct cctctctgtt cagaaaaaga tggaaattat 120
gcttgccctc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
tacccaaattg aaaaagactg tgaaacaaga ggtgatcatg ttttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac aaccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggttag cttgctacaa aggggttagc tgttcgattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449
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<210> 224

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 224

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gcttgccctc taagagagga ccaagggtgg tattgtaaaa atgcgggatc cactgtttac 180
tacccaaattg aaaaagactg cgaaacaaga ggtgatcatg ttttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac aaccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggttag cttgctacaa aggggttagc tgttcgattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449
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<210> 225

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 225

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gcttgccctc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
tacccaaattg aaaaagactg cgaaacaaga ggtgatcatg ttttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac aaccaactac 300
ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggttag cttgctacaa aggggttagc tgttcgattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449
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<210> 226

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 226

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ataggggtct acggaagctc cgtgatttac atgggtccagc tgccgatctt tgggtgtcata 60
gatacacctt gttggataat caaggcagct cctctctgtt cagaaaaaga tggaaattat 120
gcttgccctc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggttag cttgctacaa aggggttagc tgttcgattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449
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<210> 227

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 227
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gcttgccctc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggtag cttgctacaa aggggttagc tgttcaattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 228

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 228
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gcttgccctc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggtag cttgctacaa aggggttagc tgttcaattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 229

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 229
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gctttggtag cttgctacaa ggggttagc tgttcgattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 230

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 230
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gctttggtag cttgctacaa aggggttagc tgttcgattg gcagtaatcg ggttgaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 231

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 231
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gatacacctt gttggataat caaggcagct ccctcttggt cagaaaaaga tggaaattat 120
gcttgccctc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
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gctttggtag cttgctacaa aggggttagc tgctcgattg gcagtaatcg ggttggaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 232

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 232
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gatacacctt gttggataat caaggcagct ccctcttggt cagaaaaaga tggaaattat 120
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gctttggtag cttgctacaa aggggttagc tgttcaattg gcagtaatcg ggttggaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 233

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 233
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gatacacctt gttggataat caaggcagct ccctcttggt cagaaaaaga tggaaattat 120
gcttgccctc taagagagga tcaaggggtg tattgtaaaa atgcaggatc cactgtttac 180
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ccatgcaaag tcagcacagg aagacaccct atcagcatgg ttgcactatc acctctcggg 360
gctttggtag cttgctacaa aggggttagc tgttcgattg gcagtaatcg ggttggaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 234

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 234
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly

115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 235
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 235
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 236
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 236
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 237
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 237
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 238
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 238
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 239
 <211> 149
 <212> PRT

<213> human metapneumo virus

<400> 239

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Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1           5           10           15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
          20          25          30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
          35          40          45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
          50          55          60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65          70          75          80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
          85          90          95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
          100         105         110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
          115         120         125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
          130         135         140
Asn Lys Gly Cys Ser
145
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<210> 240

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 240

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Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1           5           10           15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
          20          25          30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
          35          40          45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
          50          55          60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65          70          75          80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
          85          90          95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
          100         105         110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
          115         120         125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
          130         135         140
Asn Lys Gly Cys Ser
145
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<210> 241

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 241

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Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1           5           10           15
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Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35					40					45			
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50					55					60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
	65				70					75				80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85						90				95		
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Asn	Lys	Gly	Cys	Ser											
145															

<210> 242
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10				15		
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
		20						25				30			
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50					55					60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
	65				70					75				80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85						90				95		
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Asn	Lys	Gly	Cys	Ser											
145															

<210> 243
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10				15		
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
		20						25				30			
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu

50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 244
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 244
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 245
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 245
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95

Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130				135					140				
Asn	Lys	Gly	Cys	Ser											
145															

<210> 246
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5				10						15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50				55						60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85					90					95		
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130				135					140				
Asn	Lys	Gly	Cys	Ser											
145															

<210> 247
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5				10						15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Arg	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50				55						60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85					90					95		
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu

130
Asn Lys Gly Cys Ser
145

135

140

<210> 248
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 248
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 249
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 249
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 250
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 250
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 251
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 251
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 252
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 252
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 253
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 253
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 254
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 254
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30

Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 255
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 255
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 256
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 256
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala

65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 257
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 257
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 258
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 258
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110

Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 259
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 259
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 260
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 260
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser

145

<210> 261
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 261
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 262
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 262
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 263
<211> 149

<212> PRT
 <213> human metapneumo virus

<400> 263
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 264
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 264
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 265
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 265
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile

1				5				10					15				
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser		
			20					25					30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln		
		35					40					45					
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu		
	50					55					60						
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Val	Ala		
65					70					75					80		
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser		
			85						90					95			
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser		
		100						105						110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly		
		115					120					125					
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu		
	130					135					140						
Asn	Lys	Gly	Cys	Ser													
145																	

<210> 266
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 266																	
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile		
1				5				10					15				
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser		
			20					25					30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln		
		35					40					45					
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu		
	50					55					60						
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala		
65					70					75					80		
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser		
			85						90					95			
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser		
		100						105						110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly		
		115					120					125					
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu		
	130					135					140						
Asn	Lys	Gly	Cys	Ser													
145																	

<210> 267
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 267																	
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile		
1				5				10					15				
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser		
			20					25					30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln		
		35					40					45					

Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 268

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 268

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 269

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 269

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser

				85					90					95			
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser		
			100					105						110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly		
		115					120					125					
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu		
	130					135					140						
Asn	Lys	Gly	Cys	Ser													
145																	

<210> 270
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 270																	
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile		
1				5					10					15			
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser		
			20					25					30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln		
		35				40						45					
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu		
	50				55						60						
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala		
65					70					75					80		
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser		
			85						90					95			
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser		
			100					105						110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly		
		115					120					125					
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu		
	130					135					140						
Asn	Lys	Gly	Cys	Ser													
145																	

<210> 271
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 271																	
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile		
1				5					10					15			
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser		
			20					25					30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln		
		35				40						45					
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu		
	50				55						60						
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala		
65					70					75					80		
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser		
			85						90					95			
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser		
			100					105						110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly		
		115					120					125					

Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 272
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 272
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 273
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 273
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 274
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 274
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 275
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 275
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 276
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 276

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Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1          5          10          15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
          20          25          30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
          35          40          45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
          50          55          60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65          70          75          80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
          85          90          95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
          100          105          110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
          115          120          125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
          130          135          140
Asn Lys Gly Cys Ser
145
```

<210> 277

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 277

```
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1          5          10          15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
          20          25          30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
          35          40          45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
          50          55          60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65          70          75          80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
          85          90          95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
          100          105          110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
          115          120          125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
          130          135          140
Asn Lys Gly Cys Ser
145
```

<210> 278

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 278

```
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1          5          10          15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
```


Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 281
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 281
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 282
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 282
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser

		100					105				110				
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130					135					140			
Pro	Lys	Gly	Cys	Ser											
145															

<210> 283
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 283															
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35					40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50					55					60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85					90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
			100					105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130					135					140			
Pro	Lys	Gly	Cys	Ser											
145															

<210> 284
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 284															
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35					40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50					55					60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85					90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
			100					105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130					135					140			

Pro Lys Gly Cys Ser
145

<210> 285
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 285
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Ser Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 286
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 286
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 287

<211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 287
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 288
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 288
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 289
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 289

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 290
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 290
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 291
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 291
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln

35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 292
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 292
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 293
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 293
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80

Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85					90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 294

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 294

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
		20						25					30		
Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50				55						60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75				80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85						90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 295

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 295

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
		20						25					30		
Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50				55						60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75				80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85						90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly

115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 296
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 296
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 297
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 297
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 298
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 298
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 299
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 299
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 300
 <211> 149
 <212> PRT

<213> human metapneumo virus

<400> 300

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Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1           5           10           15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
          20           25           30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
          35           40           45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
          50           55           60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65           70           75           80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
          85           90           95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
          100          105          110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
          115          120          125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
          130          135          140
Pro Lys Gly Cys Ser
145
```

<210> 301

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 301

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Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1           5           10           15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
          20           25           30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
          35           40           45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
          50           55           60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65           70           75           80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
          85           90           95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
          100          105          110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
          115          120          125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
          130          135          140
Pro Lys Gly Cys Ser
145
```

<210> 302

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 302

```
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1           5           10           15
```

Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35					40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50					55					60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75				80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85						90				95		
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
	115						120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 303
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35					40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50					55					60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75				80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
			85						90				95		
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
	115						120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 304
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
			20					25					30		
Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35					40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu

50		55		60											
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85					90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
			100					105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 305
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 305
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 306
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 306
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95

Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130				135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 307
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
		20						25					30		
Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50				55						60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85					90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
		130				135					140				
Pro	Lys	Gly	Cys	Ser											
145															

<210> 308
 <211> 149
 <212> PRT
 <213> human metapneumo virus

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10					15	
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
		20						25					30		
Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
		35				40						45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50				55						60				
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65					70					75					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85					90					95	
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
		100						105					110		
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
		115					120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu

130
Pro Lys Gly Cys Ser
145

135

140

<210> 309
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 309
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 310
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 310
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 311
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 311
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 312
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 312
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 313
 <211> 149
 <212> PRT
 <213> human metapneumo virus

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<400> 313
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1      5      10      15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20      25      30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35      40      45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50      55      60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65      70      75      80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85      90      95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100      105      110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115      120      125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130      135      140
Pro Lys Gly Cys Ser
145

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<210> 314
<211> 539
<212> PRT
<213> human metapneumo virus

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<400> 314
Met Ser Trp Lys Val Val Ile Ile Phe Ser Leu Leu Ile Thr Pro Gln
1      5      10      15
His Gly Leu Lys Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Ile Thr
20      25      30
Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
35      40      45
Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Ala Asp Gly Pro
50      55      60
Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
65      70      75      80
Leu Arg Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
85      90      95
Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
100      105      110
Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
115      120      125
Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu Lys Lys Thr
130      135      140
Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
145      150      155      160
Ala Val Arg Glu Leu Lys Asp Phe Val Ser Lys Asn Leu Thr Arg Ala
165      170      175
Ile Asn Lys Asn Lys Cys Asp Ile Ala Asp Leu Lys Met Ala Val Ser
180      185      190
Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
195      200      205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
210      215      220
Ala Glu Leu Ala Arg Ala Val Ser Asn Met Pro Thr Ser Ala Gly Gln
225      230      235      240
Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
245      250      255

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Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala
 275 280 285
 Ala Pro Ser Cys Ser Gly Lys Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile
 340 345 350
 Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380
 Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Asn Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Ser Phe Asp Pro
 435 440 445
 Val Lys Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Arg Ile
 465 470 475 480
 Leu Ser Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Ile Ile
 485 490 495
 Leu Ile Ala Val Leu Gly Ser Thr Met Ile Leu Val Ser Val Phe Ile
 500 505 510
 Ile Ile Lys Lys Thr Lys Lys Pro Thr Gly Ala Pro Pro Glu Leu Ser
 515 520 525
 Gly Val Thr Asn Asn Gly Phe Ile Pro His Asn
 530 535

<210> 315

<211> 539

<212> PRT

<213> human metapneumo virus

<400> 315

Met Ser Trp Lys Val Val Ile Ile Phe Ser Leu Leu Ile Thr Pro Gln
 1 5 10 15
 His Gly Leu Lys Glu Ser Tyr Leu Glu Ser Cys Ser Thr Ile Thr
 20 25 30
 Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Ser Asp Gly Pro
 50 55 60
 Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
 85 90 95
 Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu Lys Thr Thr

130	135	140
Asn Glu Ala Val Ser Thr	Leu Gly Asn Gly Val Arg Val Leu Ala Thr	
145	150	155
Ala Val Arg Glu Leu Lys Asp Phe Val Ser Lys Asn Leu Thr Arg Ala		160
	165	170
Ile Asn Lys Asn Lys Cys Asp Ile Asp Asp Leu Lys Met Ala Val Ser		175
	180	185
Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser		190
	195	200
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp		205
	210	215
Ala Glu Leu Ala Arg Ala Val Ser Asn Met Pro Thr Ser Ala Gly Gln		220
225	230	235
Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe		240
	245	250
Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Thr Val Gln		255
	260	265
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala		270
	275	280
Ala Pro Ser Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg		285
	290	300
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr		310
305	315	320
Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp		330
	325	335
Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile		340
	345	350
Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His		355
	360	365
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys		370
	375	380
Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile		385
	390	395
Lys Gln Leu Asn Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp		400
	405	410
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly		415
	420	425
Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Ser Phe Asp Pro		430
	435	440
Ile Lys Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe		445
	450	455
Glu Asn Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Arg Ile		460
465	470	475
Leu Ser Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Ile Ile		480
	485	490
Leu Ile Ala Val Leu Gly Ser Ser Met Ile Leu Val Ser Ile Phe Ile		495
	500	505
Ile Ile Lys Lys Thr Lys Lys Pro Thr Gly Ala Pro Pro Glu Leu Ser		510
	515	520
Gly Val Thr Asn Asn Gly Phe Ile Pro His Ser		525
530	535	

<210> 316

<211> 539

<212> PRT

<213> human metapneumo virus

<400> 316

Met Ser Trp Lys Val Met Ile Ile Ile Ser Leu Leu Ile Thr Pro Gln

1

5

10

15

His	Gly	Leu	Lys	Glu	Ser	Tyr	Leu	Glu	Glu	Ser	Cys	Ser	Thr	Ile	Thr	
		20						25					30			
Glu	Gly	Tyr	Leu	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Thr	Asn	Val	Phe	
		35					40					45				
Thr	Leu	Glu	Val	Gly	Asp	Val	Glu	Asn	Leu	Thr	Cys	Thr	Asp	Gly	Pro	
	50				55						60					
Ser	Leu	Ile	Lys	Thr	Glu	Leu	Asp	Leu	Thr	Lys	Ser	Ala	Leu	Arg	Glu	
65					70					75					80	
Leu	Lys	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Arg	Glu	Glu	Gln	Ile	Glu	
			85						90					95		
Asn	Pro	Arg	Gln	Ser	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val	
			100						105					110		
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Ile	Ala	Ile	Ala	Lys	Thr	Ile	
	115						120					125				
Arg	Leu	Glu	Ser	Glu	Val	Asn	Ala	Ile	Lys	Gly	Ala	Leu	Lys	Gln	Thr	
	130					135					140					
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr	
145					150					155					160	
Ala	Val	Arg	Glu	Leu	Lys	Glu	Phe	Val	Ser	Lys	Asn	Leu	Thr	Ser	Ala	
			165						170					175		
Ile	Asn	Arg	Asn	Lys	Cys	Asp	Ile	Ala	Asp	Leu	Lys	Met	Ala	Val	Ser	
			180					185						190		
Phe	Ser	Gln	Phe	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser	
	195						200					205				
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp	
	210					215					220					
Ala	Glu	Leu	Ala	Arg	Ala	Val	Ser	Tyr	Met	Pro	Thr	Ser	Ala	Gly	Gln	
225					230					235					240	
Ile	Lys	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe	
			245						250					255		
Gly	Ile	Leu	Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	
		260					265						270			
Leu	Pro	Ile	Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	
	275						280					285				
Ala	Pro	Ser	Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	
	290					295					300					
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	
305					310					315					320	
Pro	Asn	Glu	Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	
			325						330					335		
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	
		340					345						350			
Asn	Ile	Ser	Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	
	355					360						365				
Pro	Ile	Ser	Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	
	370					375					380					
Tyr	Lys	Gly	Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Trp	Val	Gly	Ile	Ile	
385					390					395					400	
Lys	Gln	Leu	Pro	Lys	Gly	Cys	Ser	Tyr	Ile	Thr	Asn	Gln	Asp	Ala	Asp	
			405						410					415		
Thr	Val	Thr	Ile	Asp	Asn	Thr	Val	Tyr	Gln	Leu	Ser	Lys	Val	Glu	Gly	
		420						425					430			
Glu	Gln	His	Val	Ile	Lys	Gly	Arg	Pro	Val	Ser	Ser	Ser	Phe	Asp	Pro	
	435					440						445				
Ile	Lys	Phe	Pro	Glu	Asp	Gln	Phe	Asn	Val	Ala	Leu	Asp	Gln	Val	Phe	
	450					455					460					
Glu	Ser	Ile	Glu	Asn	Ser	Gln	Ala	Leu	Val	Asp	Gln	Ser	Asn	Lys	Ile	
465					470					475					480	
Leu	Asn	Ser	Ala	Glu	Lys	Gly	Asn	Thr	Gly	Phe	Ile	Ile	Val	Val	Ile	
			485						490					495		
Leu	Val	Ala	Val	Leu	Gly	Leu	Thr	Met	Ile	Ser	Val	Ser	Ile	Ile	Ile	

			500					505					510			
Ile	Ile	Lys	Lys	Thr	Arg	Lys	Pro	Thr	Gly	Ala	Pro	Pro	Glu	Leu	Asn	
		515					520					525				
Gly	Val	Thr	Asn	Gly	Gly	Phe	Ile	Pro	His	Ser						
		530				535										

<210> 317
 <211> 539
 <212> PRT
 <213> human metapneumo virus

<400> 317

Met	Ser	Trp	Lys	Val	Met	Ile	Ile	Ile	Ser	Leu	Leu	Ile	Thr	Pro	Gln	
1				5					10					15		
His	Gly	Leu	Lys	Glu	Ser	Tyr	Leu	Glu	Glu	Ser	Cys	Ser	Thr	Ile	Thr	
			20					25					30			
Glu	Gly	Tyr	Leu	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Thr	Asn	Val	Phe	
		35				40						45				
Thr	Leu	Glu	Val	Gly	Asp	Val	Glu	Asn	Leu	Thr	Cys	Thr	Asp	Gly	Pro	
	50				55						60					
Ser	Leu	Ile	Lys	Thr	Glu	Leu	Asp	Leu	Thr	Lys	Ser	Ala	Leu	Arg	Glu	
65				70						75					80	
Leu	Lys	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Arg	Glu	Glu	Gln	Ile	Glu	
			85					90					95			
Asn	Pro	Arg	Gln	Ser	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val	
			100					105					110			
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Ile	Ala	Ile	Ala	Lys	Thr	Ile	
		115					120					125				
Arg	Leu	Glu	Ser	Glu	Val	Asn	Ala	Ile	Lys	Gly	Ala	Leu	Lys	Thr	Thr	
	130					135					140					
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr	
145					150					155					160	
Ala	Val	Arg	Glu	Leu	Lys	Glu	Phe	Val	Ser	Lys	Asn	Leu	Thr	Ser	Ala	
			165					170						175		
Ile	Asn	Lys	Asn	Lys	Cys	Asp	Ile	Ala	Asp	Leu	Lys	Met	Ala	Val	Ser	
		180						185					190			
Phe	Ser	Gln	Phe	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser	
	195						200					205				
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp	
	210					215					220					
Ala	Glu	Leu	Ala	Arg	Ala	Val	Ser	Tyr	Met	Pro	Thr	Ser	Ala	Gly	Gln	
225					230					235					240	
Ile	Lys	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe	
			245						250					255		
Gly	Ile	Leu	Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	
		260					265						270			
Leu	Pro	Ile	Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	
	275						280					285				
Ala	Pro	Ser	Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	
	290					295					300					
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	
305					310					315					320	
Pro	Asn	Glu	Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	
			325						330					335		
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	
			340					345					350			
Asn	Ile	Ser	Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	
	355					360						365				
Pro	Ile	Ser	Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	
	370					375					380					

Tyr	Lys	Gly	Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile
385					390					395					400
Lys	Gln	Leu	Pro	Lys	Gly	Cys	Ser	Tyr	Ile	Thr	Asn	Gln	Asp	Ala	Asp
				405					410					415	
Thr	Val	Thr	Ile	Asp	Asn	Thr	Val	Tyr	Gln	Leu	Ser	Lys	Val	Glu	Gly
			420					425					430		
Glu	Gln	His	Val	Ile	Lys	Gly	Arg	Pro	Val	Ser	Ser	Ser	Phe	Asp	Pro
		435				440						445			
Ile	Arg	Phe	Pro	Glu	Asp	Gln	Phe	Asn	Val	Ala	Leu	Asp	Gln	Val	Phe
450						455					460				
Glu	Ser	Ile	Glu	Asn	Ser	Gln	Ala	Leu	Val	Asp	Gln	Ser	Asn	Lys	Ile
465				470						475					480
Leu	Asn	Ser	Ala	Glu	Lys	Gly	Asn	Thr	Gly	Phe	Ile	Ile	Val	Ile	Ile
				485					490					495	
Leu	Ile	Ala	Val	Leu	Gly	Leu	Thr	Met	Ile	Ser	Val	Ser	Ile	Ile	Ile
			500				505						510		
Ile	Ile	Lys	Lys	Thr	Arg	Lys	Pro	Thr	Gly	Ala	Pro	Pro	Glu	Leu	Asn
		515				520						525			
Gly	Val	Thr	Asn	Gly	Gly	Phe	Ile	Pro	His	Ser					
		530				535									

<210> 318
 <211> 1620
 <212> DNA
 <213> human metapneumo virus

<400> 318

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acagggttgg	acaccaatgt	ttttacactg	gaggtaggcg	atgtagagaa	ccttacatgt	180
gccgatggac	ccagcttaat	aaaaacagaa	ttagacctga	ccaaaagtgc	actaagagag	240
ctcagaacag	tttctgctga	tcaactggca	agagaggagc	aaattgaaaa	tcccagacaa	300
tctagattcg	ttctaggagc	aatagcactc	gggtgttgcaa	ctgcagctgc	agttacagca	360
gggtgttgcaa	ttgccaaaac	catccggctt	gaaagtgaag	taacagcaat	taagaatgcc	420
ctcaaaaaga	ccaatgaagc	agtatctaca	ttggggaatg	gagttcgtgt	gttggcaact	480
gcagtgaag	agctgaaaag	ttttgtgagc	agaatctaa	cacgtgcaat	caacaaaaac	540
aagtgcgaca	ttgctgacct	gaaaatggcc	gttagcttca	gtcaattcaa	cagaagggtc	600
ctaaatgttg	tgcggaattt	ttcagacaac	gctggaataa	caccagcaat	atctttggac	660
ttaatgacag	atgctgaact	agccagagct	gtttccaaca	tgccaacatc	tgaggacaa	720
ataaaaactga	tggttgagaa	ccgtgcaatg	gtaagaagaa	aagggttcgg	aatcctgata	780
ggagtttacg	gaagctccgt	aatttacatg	gtgcaactgc	caatctttgg	ggttatagac	840
acgccttgct	ggatagtaaa	agcagcccct	tcttgttcag	gaaaaaagg	aaactatgct	900
tgctctttaa	gagaagacca	aggatggtat	tgtcaaaatg	cagggtcaac	tgtttactac	960
ccaaatgaaa	aagactgtga	aacaagagga	gaccatgtct	tttgcgacac	agcagcagga	1020
atcaatgttg	ctgagcagtc	aaaggagtgc	aacataaaca	tatctactac	taattaccca	1080
tgcaaagtta	gcacaggaag	acatcctatc	agtatggttg	cactatctcc	tcttggggct	1140
ttggttgctt	gctacaagg	agtgaactgt	tccattggca	gcaacagagt	aggatcatc	1200
aagcaactga	acaaaggctg	ctcttatata	accaaccaag	acgcagacac	agtgacaata	1260
gacaacactg	tataccagct	aagcaaagtt	gaaggcgaac	agcatgttat	aaaaggaagg	1320
ccagtgtcaa	gcagctttga	cccagtcaag	tttctgaag	atcaattcaa	tgttgcactt	1380
gaccaagttt	tcgagagcat	tgagaacagt	caggccttgg	tggatcaatc	aaacagaatc	1440
ctaagcagtg	cagagaaaag	aaacactggc	ttcatcattg	taataattct	aattgctgtc	1500
cttggctcta	ccatgatcct	agtgaagtgt	tttatcataa	taaagaaaac	aaagaaaccc	1560
acaggagcac	ctccagagct	gagtgggtgc	acaacaatg	gcttcatacc	acataattag	1620

<210> 319
 <211> 1620
 <212> DNA
 <213> human metapneumo virus

<400> 319

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acagggttgg	ataccaacgt	ttttacatta	gaggtgggtg	atgtagaaaa	ccttacatgt	180
tctgatggac	ctagcctaata	aaaaacagaa	ttagatctga	ccaaaagtgc	actaagagag	240
ctcaaaacag	tctctgctga	ccaattggca	agagaggaac	aaattgagaa	tcccagacaa	300
tctaggtttg	ttctaggagc	aatagcactc	ggtgttgcaa	cagcagctgc	agtcacagca	360
ggtgttgcaa	ttgccaaaac	catccggctt	gagagtgaag	tcacagcaat	taagaatgcc	420
ctcaaaacga	ccaatgaagc	agtatctaca	ttgggggaatg	gagttcgagt	gttggcaact	480
gcagtggagag	agctaaaaga	ctttgtgagc	agaatttta	ctcgtgcaat	caacaaaaac	540
aagtgcgaca	ttgatgacct	aaaaatggct	gttagcttca	gtcaattcaa	cagaagggtt	600
ctaaatggtg	tgcggaattt	ttcagacaat	gctggaataa	caccagcaat	atctttggac	660
ttaatgcacg	atgctgaact	agccaggggc	gtttctaaca	tgccgacatc	tgcaggacaa	720
ataaaattga	tggtggagaa	ccgtgcatg	gtgcgaagaa	aggggttcgg	aatcctgata	780
ggggtctacg	ggagctccgt	aatttacacg	gtgcagctgc	caatctttgg	cgttatagac	840
acgccttgct	ggatagtaaa	agcagccctt	tcttggtccg	aaaaaaagg	aaactatgct	900
tgccctcttaa	gagaagacca	aggggtggtat	tgtcagaatg	cagggtcaac	tgtttactac	960
ccaaatgaga	aagactgtga	aacaagagga	gaccatgtct	tttgcgacac	agcagcagga	1020
attaatggtg	ctgagcaatc	aaaggagtgc	aacatcaaca	tatccactac	aaattaccca	1080
tgcaaagtca	gcacaggaag	acatccctac	agtatgggtg	cactgtctcc	tcttggggct	1140
ctgggtgctt	gctacaaagg	agtaagctgt	tccattggga	gcaacagagt	agggatcatc	1200
aagcagctga	acaaagggtg	ctcctatata	accaaccaag	atgcagacac	agtgacaata	1260
gacaacactg	tatatcagct	aagcaaagtt	gaggggtgaac	agcatgttat	aaaaggcaga	1320
ccagtgtcaa	gcagctttga	tccaatcaag	tttcctgaag	atcaattcaa	tggtgcactt	1380
gaccaagttt	ttgagaacat	tgaaaacagc	caggccttag	tagatcaatc	aaacagaatc	1440
ctaagcagtg	cagagaaaag	gaatactggc	tttatcattg	taataattct	aattgctgtc	1500
cttggctcta	gcattgatcct	agtgagcatc	ttcattataa	tcaagaaaac	aaagaaacca	1560
acgggagcac	ctccagagct	gagtgggtgc	acaaacaatg	gcttcatacc	acacagttag	1620

<210> 320

<211> 1620

<212> DNA

<213> human metapneumo virus

<400> 320

atgtccttgga	aagtgatgat	catcattttcg	ttactcataa	caccccagca	cgggctaaaag	60
gagagttatt	tggaagaatc	atgtagtact	ataactgagg	gatacctcag	tgttttaaga	120
acaggctggg	acactaatgt	cttcacatta	gaagttgggtg	atgttgaaaa	tcttacatgt	180
actgatggac	ctagcttaata	caaaacagaa	cttgatctaa	caaaaagtgc	tttaagggaa	240
ctcaaaacag	tctctgctga	tcagttggcg	agagagggagc	aaattgaaaa	tcccagacaa	300
tcaagatttg	tcttaggtgc	gatagctctc	ggagttgcta	cagcagcagc	agtcacagca	360
ggcattgcaa	tagccaaaac	cataaggctt	gagagtggag	tgaatgcaat	taaagggtgc	420
ctcaaaacaa	ctaataaagc	agtatccaca	ttagggaatg	gtgtgcgggt	cctagccact	480
gcagtggagag	agctaaaaga	atgtgtgagc	aaaaaacctga	ctagtgcatt	caacaggaac	540
aaatgtgaca	ttgctgatct	gaagatggct	gtcagcttca	gtcaattcaa	cagaagattt	600
ctaaatggtg	tgcggcagtt	ttcagacaat	gcagggataa	caccagcaat	atcattggac	660
ctgatgactg	atgctgagtt	ggccagagct	gtatcatata	tgccaacatc	tgcagggcag	720
ataaaactga	tggtggagaa	ccgcgcaatg	gtaaggagaa	aaggatttgg	aatcctgata	780
ggggtctacg	gaagctctgt	gattttacatg	gttcaattgc	cgatctttgg	tgtcatagat	840
acaccttggt	ggatcatcaa	ggcagctccc	tcttgctcag	aaaaaaacgg	gaattatgct	900
tgccctctaa	gagaggatca	aggggtggat	tgtaaaaatg	caggatctac	tgtttactac	960
ccaaatgaaa	aagactgcga	aacaagaggt	gatcatgttt	tttgtgacac	agcagcagg	1020
atcaatggtg	ctgagcaatc	aagagaatgc	aacatcaaca	tatctactac	caactaccca	1080
tgcaaagtca	gcacaggaag	acaccctata	agcatgggtg	cactatcacc	tctcggtgct	1140
ttgggtggctt	gctataaagg	ggtaagctgc	tcgattggca	gcaattgggt	tggaaatcatc	1200
aaacaattac	ccaaaggctg	ctcatacata	accaaccagg	atgcagacac	tgtaacaatt	1260
gacaataaccg	tgtatcaact	aagcaaagtt	gaaggtgaac	agcatgtaat	aaaaggggaga	1320
ccagtttcaa	gcagttttga	tccaatcaag	tttcctgagg	atcagttcaa	tggtgcgctt	1380
gatcaagtct	tcgaaagcat	tgagaacagt	caggcactag	tggaccagtc	aaacaaaatt	1440

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ctaaacagtg cagaaaaagg aaacactggg ttcattatcg tagtaatfff ggttgctggt 1500
cttgggtctaa ccatgatttc agtgagcatc atcatcataa tcaagaaaaac aaggaagccc 1560
acaggagcac ctccagagct gaatgggtgc accaacggcg gtttcatacc acatagttag 1620

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<210> 321
<211> 1620
<212> DNA
<213> human metapneumo virus

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<400> 321
atgtcttgga aagtgatgat tatcatttcg ttactcataa cacctcagca cggactaaaa 60
gaaagttatt tagaagaatc atgtagtact ataactgaag gatattctcag tgttttaaga 120
acaggttggg acaccaatgt ctttacatta gaagttgggt atgttgaaaa tcttacatgt 180
actgatggac ctagcttaat caaaacagaa cttgacctaa ccaaaagtgc tctgagagaa 240
ctcaaaacag tttctgctga tcagttagcg agagaagaac aaattgaaaa tcccagacaa 300
tcaaggtttg tcctaggtgc aatagctctt ggagttgcca cagcagcagc agtcacagca 360
ggcattgcaa tagccaaaac cataagactt gagagtgaag tgaatgcaat caaaggtgct 420
ctcaaaacaa ccaacgaggg agtatccaca ctaggaaatg gagtgcgagt cctagccact 480
gcagtaagag agctgaaaga atttgtgagc aaaaacctga ctagtgcgat caacaagaac 540
aaatgtgaca ttgctgatct gaagatggct gtcagcttca gtcaattcaa cagaagattc 600
ctaaatgttg tgcggcagtt ttcagacaat gcagggataa caccagcaat atcattggac 660
ctaagtactg atgctgagct ggccagagct gtatcataca tgccaacatc tgcaggacag 720
ataaaactaa tgttagagaa ccgtgcaatg gtgaggagaa aaggatttgg aatcttgata 780
ggggtctacg gaagctctgt gatttacatg gtccagctgc cgatctttgg tgtcatagat 840
acaccttggt ggataatcaa ggcagctccc tcttgttcag aaaaagatgg aaattatgct 900
tgcctcctaa gagaggatca agggtgggtat tgcaaaaatg caggatccac tgtttactac 960
ccaaatgaaa aagactgcga aacaagaggt gatcatgttt tttgtgacac agcagcaggg 1020
atcaatggtg ctgagcaatc aagagaatgc aacatcaaca tatctaccac caactacca 1080
tgcaaagtca gcacaggaag acacctatc agcatgggtg cactatcacc tctcgggtgct 1140
ttggtagctt gctacaaggg ggtagctgc tcgattggca gtaatcgggt tggataaatc 1200
aaacaactac ctaaaggctg ctcatacata actaaccagg acgcagacac tgtaacaatt 1260
gacaacactg tgtatcaact aagcaaagtt gaggggtgaac agcatgtaat aaaagggaga 1320
ccagtttcaa gcagttttga tccaatcagg tttcctgagg atcagttcaa tgttgcgctt 1380
gatcaagtct ttgaaagcat tgaaaacagt caagcactag tggaccagtc aaacaaaatt 1440
ctgaacagtg cagaaaaagg aaacactggg ttcattattg taataatfff gattgctggt 1500
cttgggttaa ccatgatttc agtgagcatc atcatcataa tcaaaaaaac aaggaagccc 1560
acagggggcac ctccagagct gaatgggtgtt accaacggcg gttttatacc gcatagttag 1620

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<210> 322
<211> 236
<212> PRT
<213> human metapneumo virus

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<400> 322
Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
1 5 10 15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20 25 30
Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35 40 45
Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
50 55 60
His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
65 70 75 80
Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
85 90 95
Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
100 105 110
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asn Arg Pro Pro

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Lys	Ile	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Arg	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
		35					40					45			
Leu	Ile	Ile	Asp	His	Ala	Thr	Leu	Arg	Asn	Met	Ile	Lys	Thr	Glu	Asn
		50				55					60				
Cys	Ala	Asn	Met	Pro	Ser	Ala	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
65					70					75					80
Ser	Thr	Ala	Gly	Pro	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Trp	Thr	Thr	Glu	Asn	Ser	Thr	Ser	Pro	Val	Ala	Thr	Pro	Glu	Gly	His
			100					105					110		
Pro	Tyr	Thr	Gly	Thr	Thr	Gln	Thr	Ser	Asp	Thr	Thr	Ala	Pro	Gln	Gln
		115					120					125			
Thr	Thr	Asp	Lys	His	Thr	Ala	Pro	Leu	Lys	Ser	Thr	Asn	Glu	Gln	Ile
		130				135					140				
Thr	Gln	Thr	Thr	Thr	Glu	Lys	Lys	Thr	Ile	Arg	Ala	Thr	Thr	Gln	Lys
145					150					155					160
Arg	Glu	Lys	Gly	Lys	Glu	Asn	Thr	Asn	Gln	Thr	Thr	Ser	Thr	Ala	Ala
				165					170						175
Thr	Gln	Thr	Thr	Asn	Thr	Thr	Asn	Gln	Ile	Arg	Asn	Ala	Ser	Glu	Thr
			180					185					190		
Ile	Thr	Thr	Ser	Asp	Arg	Pro	Arg	Thr	Asp	Thr	Thr	Thr	Gln	Ser	Ser
		195					200					205			
Glu	Gln	Thr	Thr	Arg	Ala	Thr	Asp	Pro	Ser	Ser	Pro	Pro	His	His	Ala
		210				215					220				

<210> 325

<211> 236

<212> PRT

<213> human metapneumo virus

<400> 325

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5					10					15	
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr
			20					25					30		
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
		35					40					45			
Leu	Ile	Ile	Asp	Tyr	Ala	Met	Leu	Lys	Asn	Met	Thr	Lys	Val	Glu	His
		50				55					60				
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
65					70					75					80
Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85					90					95	
Leu	Ala	Ala	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Ser	Glu	Asp	His
			100					105					110		
Leu	His	Thr	Gly	Thr	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln
		115					120					125			
Thr	Thr	Asp	Glu	Tyr	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr
		130				135					140				
Thr	Gln	Thr	Thr	Thr	Glu	Lys	Lys	Pro	Thr	Gly	Ala	Thr	Thr	Lys	Lys
145					150					155					160
Glu	Thr	Thr	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn
				165					170					175	
Thr	Thr	Asn	Gln	Thr	Ser	Tyr	Val	Arg	Glu	Ala	Thr	Thr	Thr	Ser	Ala
			180					185					190		
Arg	Ser	Arg	Asn	Ser	Ala	Thr	Thr	Gln	Ser	Ser	Asp	Gln	Thr	Thr	Gln
		195					200					205			
Ala	Ala	Asp	Pro	Ser	Ser	Gln	Pro	His	His	Thr	Gln	Lys	Ser	Thr	Thr

210		215		220
Thr Thr Tyr Asn Thr Asp Thr Ser Ser Pro Ser Ser				
225		230		235

<210> 326
 <211> 708
 <212> DNA
 <213> human metapneumo virus

<400> 326
 gaggtgaaag tggagaacat tcgaacaata gatatgctca aagcaagagt aaaaaatcgt 60
 gtggcacgca gcaaatgctt taaaaatgcc tctttggtcc tcataggaat aactacattg 120
 agtattgccc tcaatatcta tctgatcata aactataaaa tgcaaaaaaa cacatctgaa 180
 tcagaacatc acaccagctc atcaccatg gaatccagca gagaaactcc aacgggtcccc 240
 acagacaact cagacaccaa ctcaagccca cagcatccaa ctcaacagtc cacagaaggc 300
 tccacactct actttgcagc ctcaagcagc tcaccagaga cagaaccaac atcaacacca 360
 gatacaacaa accgcccgcg cttcgtcgcac acacacacaa caccaccaag cgcaagcaga 420
 acaaagacaa gtccggcagc ccacacacaaa aacaacccaa ggacaagctc tagaacacat 480
 tctccaccac gggcaacgac aaggacggca cgcagaacca ccactctccg cacaagcagc 540
 acaagaaaaga gaccgtccac agcatcagtc caacctgaca tcagcgcgaac aaccacaaa 600
 aacgaagaag caagtccagc gagcccacaa acatctgcaa gcacaacaag aatacaaagg 660
 aaaagcgtgg aggccaacac atcaacaaca tacaacacaa ctagttaa 708

<210> 327
 <211> 660
 <212> DNA
 <213> human metapneumo virus

<400> 327
 atggaggtga aagtagagaa cattcgagca atagacatgc tcaaagcaag agtgaaaaat 60
 cgtgtggcac gtagcaaatg ctttaaaaaat gcttcttttaa tcctcatagg aataactaca 120
 ctgagtatag ctctcaatat ctatctgac ataaactaca caatacaaaa aaccacatcc 180
 gaatcagaac accacaccag ctccaccacc acagaaccca acaaggaagc ttcaacaatc 240
 tccacagaca acccagacat caatccaagc tcacagcatc caactcaaca gtccacagaa 300
 aaccccacac tcaaccccg cgcctcagcg agcccatcag aaacagaacc agcatcaaca 360
 ccagacacaa caaacgcct gtcctccgta gacaggtcca cagcacaacc aagtgaagc 420
 agaacaaaaga caaacccgac agtccacaca atcaacaacc caaacacagc ttccagtaca 480
 caatccccac cagggacaa aacgaaggca atccgcagag ccaccacttt ccgcatgagc 540
 agcacaggaa aaagaccaac cacaacatta gtccagtcag acagcagcac cacaacccaa 600
 aatcatgaag aaacaggttc agcgaaccca caggcgtctg caagcacaat gcaaaactag 660

<210> 328
 <211> 675
 <212> DNA
 <213> human metapneumo virus

<400> 328
 atggaagtaa gaggggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaaac 60
 cgtataagaa gcagcagggtg ctatagaaat gctacactga tccttatttg actaacagcg 120
 ttaagcatgg cacttaatat tttcctgac atcgatcatg caacattaag aaacatgatc 180
 aaaacagaaa actgtgctaa catgccgtcg gcagaaccaa gcaaaaagac cccaatgacc 240
 tccacagcag gcccaaacac caaacccaat ccacagcaag caacacagtg gaccacagag 300
 aactcaacat ccccgtagc aacccagag ggccatccat acacaggggac aactcaaaca 360
 tcagacacaa cagctcccca gcaaaccaca gacaaacaca cagcaccgct aaaatcaacc 420
 aatgaacaga tccccagac aaccacagag aaaaagacaa tcagagcaac aacccaaaaa 480
 agggaaaaag gaaaagaaaa cacaaccaa accacaagca cagctgcaac ccaaaacaacc 540
 aacaccacca accaaatcag aaatgcaagt gagacaatca caacatccga cagacccaga 600
 actgacacca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccca 660
 ccacaccatg catag 675

<210> 329
 <211> 711
 <212> DNA
 <213> human metapneumo virus

<400> 329
 atggaagtaa gaggaggagaa cattcgggca atagacatgt tcaaagcaaa aatgaaaaac 60
 cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
 ttaagtatgg cacttaatat ttttttaatc attgattatg caatgttaaa aaacatgacc 180
 aaagtggaac actgtgttaa tatgccgccg gtagaaccac gcaagaagac cccaatgacc 240
 tctgcagtag acttaaacac caaacccaat ccacagcagg caacacagtt ggccgcagag 300
 gattcaacat ctctagcagc aacctcagag gaccatctac acacaggagac aactccaaca 360
 ccagatgcaa cagtctctca gcaaaccaca gacgagtaca caacattgct gagatcaacc 420
 aacagacaga ccacccaaac aaccacagag aaaaagccaa ccggagcaac aacccaaaaa 480
 gaaaccacaa ctctgaactac aagcacagct gcaacccaaa cactcaacac taccaacca 540
 actagctatg tgagagaggc aaccacaaca tccgccagat ccagaaacag tgccacaact 600
 caaagcagcg accaaacaac ccaggcagca gacccaagct cccaaccaca ccatacacag 660
 aaaagcacia caacaacata caacacagac acatcctctc caagtagtta a 711

<210> 330
 <211> 2005
 <212> PRT
 <213> human metapneumo virus

<400> 330
 Met Asp Pro Leu Asn Glu Ser Thr Val Asn Val Tyr Leu Pro Asp Ser
 1 5 10 15
 Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Thr Asn Ala Ile Gly Ser
 20 25 30
 Cys Leu Leu Lys Arg Pro Tyr Leu Lys Asn Asp Asn Thr Ala Lys Val
 35 40 45
 Ala Ile Glu Asn Pro Val Ile Glu His Val Arg Leu Lys Asn Ala Val
 50 55 60
 Asn Ser Lys Met Lys Ile Ser Asp Tyr Lys Ile Val Glu Pro Val Asn
 65 70 75 80
 Met Gln His Glu Ile Met Lys Asn Val His Ser Cys Glu Leu Thr Leu
 85 90 95
 Leu Lys Gln Phe Leu Thr Arg Ser Lys Asn Ile Ser Thr Leu Lys Leu
 100 105 110
 Asn Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr Ser Asp Asp Thr
 115 120 125
 Ser Ile Leu Ser Phe Ile Asp Val Glu Phe Ile Pro Ser Trp Val Ser
 130 135 140
 Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn Lys Leu Ile Leu Glu Phe
 145 150 155 160
 Arg Lys Glu Glu Val Ile Arg Thr Gly Ser Ile Leu Cys Arg Ser Leu
 165 170 175
 Gly Lys Leu Val Phe Val Val Ser Ser Tyr Gly Cys Ile Val Lys Ser
 180 185 190
 Asn Lys Ser Lys Arg Val Ser Phe Phe Thr Tyr Asn Gln Leu Leu Thr
 195 200 205
 Trp Lys Asp Val Met Leu Ser Arg Phe Asn Ala Asn Phe Cys Ile Trp
 210 215 220
 Val Ser Asn Ser Leu Asn Glu Asn Gln Glu Gly Leu Gly Leu Arg Ser
 225 230 235 240
 Asn Leu Gln Gly Ile Leu Thr Asn Lys Leu Tyr Glu Thr Val Asp Tyr
 245 250 255
 Met Leu Ser Leu Cys Cys Asn Glu Gly Phe Ser Leu Val Lys Glu Phe
 260 265 270
 Glu Gly Phe Ile Met Ser Glu Ile Leu Arg Ile Thr Glu His Ala Gln

NY2: 1449616.1

Ser	Leu	Ala	Val	Lys	Met	Leu	Lys	Glu	Ile	Arg	Asp	Ala	Tyr	Arg	Asn
770						775					780				
Ile	Gly	His	Lys	Leu	Lys	Glu	Gly	Glu	Thr	Tyr	Ile	Ser	Arg	Asp	Leu
785					790					795					800
Gln	Phe	Ile	Ser	Lys	Val	Ile	Gln	Ser	Glu	Gly	Val	Met	His	Pro	Thr
				805					810					815	
Pro	Ile	Lys	Lys	Ile	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	Ile	Leu
			820					825					830		
Asp	Asp	Ile	Lys	Thr	Ser	Ala	Glu	Ser	Ile	Gly	Ser	Leu	Cys	Gln	Glu
		835					840					845			
Leu	Glu	Phe	Arg	Gly	Glu	Ser	Ile	Ile	Val	Ser	Leu	Ile	Leu	Arg	Asn
850						855					860				
Phe	Trp	Leu	Tyr	Asn	Leu	Tyr	Met	His	Glu	Ser	Lys	Gln	His	Pro	Leu
865					870					875					880
Ala	Gly	Lys	Gln	Leu	Phe	Lys	Gln	Leu	Asn	Lys	Thr	Leu	Thr	Ser	Val
				885					890					895	
Gln	Arg	Phe	Phe	Glu	Ile	Lys	Lys	Glu	Asn	Glu	Val	Val	Asp	Leu	Trp
			900					905					910		
Met	Asn	Ile	Pro	Met	Gln	Phe	Gly	Gly	Gly	Asp	Pro	Val	Val	Phe	Tyr
		915					920						925		
Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	Ile	Ser
930						935						940			
His	Val	Asp	Ile	Leu	Leu	Arg	Ile	Ser	Ala	Asn	Ile	Arg	Asn	Glu	Ala
945					950					955					960
Lys	Ile	Ser	Phe	Phe	Lys	Ala	Leu	Leu	Ser	Ile	Glu	Lys	Asn	Glu	Arg
				965					970					975	
Ala	Thr	Leu	Thr	Thr	Leu	Met	Arg	Asp	Pro	Gln	Ala	Val	Gly	Ser	Glu
			980					985					990		
Arg	Gln	Ala	Lys	Val	Thr	Ser	Asp	Ile	Asn	Arg	Thr	Ala	Val	Thr	Ser
		995					1000					1005			
Ile	Leu	Ser	Leu	Ser	Pro	Asn	Gln	Leu	Phe	Ser	Asp	Ser	Ala	Ile	His
1010						1015					1020				
Tyr	Ser	Arg	Asn	Glu	Glu	Glu	Val	Gly	Ile	Ile	Ala	Asp	Asn	Ile	Thr
1025					1030					1035					1040
Pro	Val	Tyr	Pro	His	Gly	Leu	Arg	Val	Leu	Tyr	Glu	Ser	Leu	Pro	Phe
				1045					1050					1055	
His	Lys	Ala	Glu	Lys	Val	Val	Asn	Met	Ile	Ser	Gly	Thr	Lys	Ser	Ile
			1060					1065					1070		
Thr	Asn	Leu	Leu	Gln	Arg	Thr	Ser	Ala	Ile	Asn	Gly	Glu	Asp	Ile	Asp
		1075					1080					1085			
Arg	Ala	Val	Ser	Met	Met	Leu	Glu	Asn	Leu	Gly	Leu	Leu	Ser	Arg	Ile
1090						1095					1100				
Leu	Ser	Val	Val	Val	Asp	Ser	Ile	Glu	Ile	Pro	Thr	Lys	Ser	Asn	Gly
1105					1110					1115					1120
Arg	Leu	Ile	Cys	Cys	Gln	Ile	Ser	Arg	Thr	Leu	Arg	Glu	Thr	Ser	Trp
				1125					1130					1135	
Asn	Asn	Met	Glu	Ile	Val	Gly	Val	Thr	Ser	Pro	Ser	Ile	Thr	Thr	Cys
		1140						1145					1150		
Met	Asp	Val	Ile	Tyr	Ala	Thr	Ser	Ser	His	Leu	Lys	Gly	Ile	Ile	Ile
		1155					1160					1165			
Glu	Lys	Phe	Ser	Thr	Asp	Arg	Thr	Thr	Arg	Gly	Gln	Arg	Gly	Pro	Lys
1170						1175					1180				
Ser	Pro	Trp	Val	Gly	Ser	Ser	Thr	Gln	Glu	Lys	Lys	Leu	Val	Pro	Val
1185					1190					1195					1200
Tyr	Asn	Arg	Gln	Ile	Leu	Ser	Lys	Gln	Gln	Arg	Glu	Gln	Leu	Glu	Ala
				1205					1210					1215	
Ile	Gly	Lys	Met	Arg	Trp	Val	Tyr	Lys	Gly	Thr	Pro	Gly	Leu	Arg	Arg
			1220					1225					1230		
Leu	Leu	Asn	Lys	Ile	Cys	Leu	Gly	Ser	Leu	Gly	Ile	Ser	Tyr	Lys	Cys
		1235					1240					1245			
Val	Lys	Pro	Leu	Leu	Pro	Arg	Phe	Met	Ser	Val	Asn	Phe	Leu	His	Arg

1250	1255	1260
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala		
1265	1270	1275
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala		1280
	1285	1290
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn		1295
	1300	1305
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr		1310
	1315	1320
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Glu Ile		1325
	1330	1335
Asp Ile Met Pro Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu		1340
1345	1350	1355
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile		1360
	1365	1370
Asp Met Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln		1375
	1380	1385
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn		1390
	1395	1400
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly		1405
	1410	1415
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Lys Lys Asp Trp		1420
1425	1430	1435
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Ile Phe		1440
	1445	1450
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly		1455
	1460	1465
Lys Asn Ile Lys Asp Glu Asp Ile Val Asp Glu Ser Ile Asp Lys Leu		1470
	1475	1480
Leu Arg Ile Asp Asn Thr Phe Trp Arg Met Phe Ser Lys Val Met Phe		1485
	1490	1495
Glu Ser Lys Val Lys Lys Arg Ile Met Leu Tyr Asp Val Lys Phe Leu		1500
1505	1510	1515
Ser Leu Val Gly Tyr Ile Gly Phe Lys Asn Trp Phe Ile Glu Gln Leu		1520
	1525	1530
Arg Ser Ala Glu Leu His Glu Val Pro Trp Ile Val Asn Ala Glu Gly		1535
	1540	1545
Asp Leu Val Glu Ile Lys Ser Ile Lys Ile Tyr Leu Gln Leu Ile Glu		1550
	1555	1560
Gln Ser Leu Phe Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala		1565
	1570	1575
His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala		1580
1585	1590	1595
Leu Leu Thr Pro Ile Pro Ser Pro Met Val Asn Leu Thr Gln Val Ile		1600
	1605	1610
Asp Pro Thr Glu Gln Leu Ala Tyr Phe Pro Lys Ile Thr Phe Glu Arg		1615
	1620	1625
Leu Lys Asn Tyr Asp Thr Ser Ser Asn Tyr Ala Lys Gly Lys Leu Thr		1630
	1635	1640
Arg Asn Tyr Met Ile Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn		1645
	1650	1655
Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile		1660
1665	1670	1675
Gly Lys Leu Met Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly		1680
	1685	1690
Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp		1695
	1700	1705
Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr		1710
	1715	1720
Pro Leu Glu Tyr Gln Arg Val Ile Gly Glu Leu Ser Arg Ile Ile Asp		1725
	1730	1735
		1740

Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Val Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asp Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Thr Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Lys Asp Cys Asn
 1810 1815 1820
 Val Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
 1825 1830 1835 1840
 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly
 1845 1850 1855
 His His Asn Asn Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met
 1860 1865 1870
 Lys Ile Ala Val Cys Asn Asp Phe Tyr Ala Ala Lys Lys Leu Asp Asn
 1875 1880 1885
 Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile
 1890 1895 1900
 Pro Ile Asn Lys Lys Glu Leu Asn Arg Gln Arg Arg Leu Leu Thr Leu
 1905 1910 1915 1920
 Gln Ser Asn His Ser Ser Val Ala Thr Val Gly Gly Ser Lys Val Ile
 1925 1930 1935
 Glu Ser Lys Trp Leu Thr Asn Lys Ala Asn Thr Ile Ile Asp Trp Leu
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 Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe
 1955 1960 1965
 Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn
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 Ala Ile Glu Asn Pro Val Ile Glu His Val Arg Leu Lys Asn Ala Val
 50 55 60
 Asn Ser Lys Met Lys Ile Ser Asp Tyr Lys Val Val Glu Pro Val Asn
 65 70 75 80
 Met Gln His Glu Ile Met Lys Asn Val His Ser Cys Glu Leu Thr Leu
 85 90 95
 Leu Lys Gln Phe Leu Thr Arg Ser Lys Asn Ile Ser Thr Leu Lys Leu
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 Asn Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr Ser Asp Asp Thr
 115 120 125
 Ser Ile Leu Ser Phe Ile Asp Val Glu Phe Ile Pro Ser Trp Val Ser
 130 135 140
 Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn Lys Leu Ile Leu Glu Phe

145	Arg	Arg	Glu	Glu	Val	Ile	Arg	Thr	Gly	Ser	Ile	Leu	Cys	Arg	Ser	Leu
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Gly	Lys	Leu	Val	Phe	Ile	Val	Ser	Ser	Tyr	Gly	Cys	Ile	Val	Lys	Ser	
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Asn	Lys	Ser	Lys	Arg	Val	Ser	Phe	Phe	Thr	Tyr	Asn	Gln	Leu	Leu	Thr	
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Trp	Lys	Asp	Val	Met	Leu	Ser	Arg	Phe	Asn	Ala	Asn	Phe	Cys	Ile	Trp	
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Val	Ser	Asn	Ser	Leu	Asn	Glu	Asn	Gln	Glu	Gly	Leu	Gly	Leu	Arg	Ser	
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Asn	Leu	Gln	Gly	Met	Leu	Thr	Asn	Lys	Leu	Tyr	Glu	Thr	Val	Asp	Tyr	
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Met	Leu	Ser	Leu	Cys	Cys	Asn	Glu	Gly	Phe	Ser	Leu	Val	Lys	Glu	Phe	
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Glu	Gly	Phe	Ile	Met	Ser	Glu	Ile	Leu	Arg	Ile	Thr	Glu	His	Ala	Gln	
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Phe	Ser	Thr	Arg	Phe	Arg	Asn	Thr	Leu	Leu	Asn	Gly	Leu	Thr	Asp	Gln	
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Leu	Thr	Lys	Leu	Lys	Asn	Lys	Asn	Arg	Leu	Arg	Val	His	Gly	Thr	Val	
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Gly	Asp	Thr	Leu	Arg	Cys	Ile	Lys	Leu	Leu	Ile	Asn	Lys	Asn	Leu	Glu	
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Asn	Ala	Ala	Glu	Leu	Tyr	Tyr	Ile	Phe	Arg	Ile	Phe	Gly	His	Pro	Met	
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Val	Asp	Glu	Arg	Asp	Ala	Met	Asp	Ala	Val	Lys	Leu	Asn	Asn	Glu	Ile	
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Thr	Lys	Ile	Leu	Arg	Leu	Glu	Ser	Leu	Thr	Glu	Leu	Arg	Gly	Ala	Phe	
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Ile	Leu	Arg	Ile	Ile	Lys	Gly	Phe	Val	Asp	Asn	Asn	Lys	Arg	Trp	Pro	
			405					410						415		
Lys	Ile	Lys	Asn	Leu	Ile	Val	Leu	Ser	Lys	Arg	Trp	Thr	Met	Tyr	Phe	
			420					425					430			
Lys	Ala	Lys	Asn	Tyr	Pro	Ser	Gln	Leu	Glu	Leu	Ser	Glu	Gln	Asp	Phe	
	435						440					445				
Leu	Glu	Leu	Ala	Ala	Ile	Gln	Phe	Glu	Gln	Glu	Phe	Ser	Val	Pro	Glu	
	450					455				460						
Lys	Thr	Asn	Leu	Glu	Met	Val	Leu	Asn	Asp	Lys	Ala	Ile	Ser	Pro	Pro	
465					470				475						480	
Lys	Arg	Leu	Ile	Trp	Ser	Val	Tyr	Pro	Lys	Asn	Tyr	Leu	Pro	Glu	Thr	
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Ile	Lys	Asn	Arg	Tyr	Leu	Glu	Glu	Thr	Phe	Asn	Ala	Ser	Asp	Ser	Leu	
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Lys	Thr	Arg	Arg	Val	Leu	Glu	Tyr	Leu	Lys	Asp	Asn	Lys	Phe	Asp		
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Gln	Lys	Glu	Leu	Lys	Ser	Tyr	Val	Val	Arg	Gln	Glu	Tyr	Leu	Asn	Asp	
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Lys	Glu	His	Ile	Val	Ser	Leu	Thr	Gly	Lys	Glu	Arg	Glu	Leu	Ser	Val	
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Gly	Arg	Met	Phe	Ala	Met	Gln	Pro	Gly	Lys	Gln	Arg	Gln	Ile	Gln	Ile	
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Leu	Ala	Glu	Lys	Leu	Leu	Ala	Asp	Asn	Ile	Val	Pro	Phe	Phe	Pro	Glu	
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Thr	Leu	Thr	Lys	Tyr	Gly	Asp	Leu	Asp	Leu	Gln	Arg	Ile	Met	Glu	Ile	
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Lys	Ser	Glu	Leu	Ser	Ser	Ile	Lys	Thr	Arg	Arg	Asn	Asp	Ser	Tyr	Asn	
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Asn	Tyr	Ile	Ala	Arg	Ala	Ser	Ile	Val	Thr	Asp	Leu	Ser	Lys	Phe	Asn	
625					630					635					640	

Gln	Ala	Phe	Arg	Tyr	Glu	Thr	Thr	Ala	Ile	Cys	Ala	Asp	Val	Ala	Asp	
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Glu	Leu	His	Gly	Thr	Gln	Ser	Leu	Phe	Cys	Trp	Leu	His	Leu	Ile	Val	
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Pro	Met	Thr	Thr	Met	Ile	Cys	Ala	Tyr	Arg	His	Ala	Pro	Pro	Glu	Thr	
				675					680					685		
Lys	Gly	Glu	Tyr	Asp	Ile	Asp	Lys	Ile	Glu	Glu	Gln	Ser	Gly	Leu	Tyr	
						695						700				
Arg	Tyr	His	Met	Gly	Gly	Ile	Glu	Gly	Trp	Cys	Gln	Lys	Leu	Trp	Thr	
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Met	Glu	Ala	Ile	Ser	Leu	Leu	Asp	Val	Val	Ser	Val	Lys	Thr	Arg	Cys	
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Gln	Met	Thr	Ser	Leu	Leu	Asn	Gly	Asp	Asn	Gln	Ser	Ile	Asp	Val	Ser	
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Lys	Pro	Val	Lys	Leu	Ser	Glu	Gly	Leu	Asp	Glu	Val	Lys	Ala	Asp	Tyr	
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Arg	Leu	Ala	Ile	Lys	Met	Leu	Lys	Glu	Ile	Arg	Asp	Ala	Tyr	Arg	Asn	
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Ile	Gly	His	Lys	Leu	Lys	Glu	Gly	Glu	Thr	Tyr	Ile	Ser	Arg	Asp	Leu	
785					790					795					800	
Gln	Phe	Ile	Ser	Lys	Val	Ile	Gln	Ser	Glu	Gly	Val	Met	His	Pro	Thr	
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Pro	Ile	Lys	Lys	Val	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	Ile	Leu	
				820					825					830		
Asp	Asp	Ile	Lys	Thr	Ser	Ala	Glu	Ser	Ile	Gly	Ser	Leu	Cys	Gln	Glu	
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Leu	Glu	Phe	Arg	Gly	Glu	Ser	Ile	Ile	Val	Ser	Leu	Ile	Leu	Arg	Asn	
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Phe	Trp	Leu	Tyr	Asn	Leu	Tyr	Met	His	Glu	Ser	Lys	Gln	His	Pro	Leu	
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Ala	Gly	Lys	Gln	Leu	Phe	Lys	Gln	Leu	Asn	Lys	Thr	Leu	Thr	Ser	Val	
				885						890					895	
Gln	Arg	Phe	Phe	Glu	Ile	Lys	Lys	Glu	Asn	Glu	Val	Val	Asp	Leu	Trp	
				900					905					910		
Met	Asn	Ile	Pro	Met	Gln	Phe	Gly	Gly	Gly	Asp	Pro	Val	Val	Phe	Tyr	
				915				920					925			
Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	Ile	Ser	
				930			935					940				
His	Val	Asp	Ile	Leu	Leu	Lys	Ile	Ser	Ala	Asn	Ile	Lys	Asn	Glu	Thr	
945					950					955					960	
Lys	Val	Ser	Phe	Phe	Lys	Ala	Leu	Leu	Ser	Ile	Glu	Lys	Asn	Glu	Arg	
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Ala	Thr	Leu	Thr	Thr	Leu	Met	Arg	Asp	Pro	Gln	Ala	Val	Gly	Ser	Glu	
				980					985					990		
Arg	Gln	Ala	Lys	Val	Thr	Ser	Asp	Ile	Asn	Arg	Thr	Ala	Val	Thr	Ser	
				995			1000						1005			
Ile	Leu	Ser	Leu	Ser	Pro	Asn	Gln	Leu	Phe	Ser	Asp	Ser	Ala	Ile	His	
						1015						1020				
Tyr	Ser	Arg	Asn	Glu	Glu	Glu	Val	Gly	Ile	Ile	Ala	Glu	Asn	Ile	Thr	
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Pro	Val	Tyr	Pro	His	Gly	Leu	Arg	Val	Leu	Tyr	Glu	Ser	Leu	Pro	Phe	
				1045						1050					1055	
His	Lys	Ala	Glu	Lys	Val	Val	Asn	Met	Ile	Ser	Gly	Thr	Lys	Ser	Ile	
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Thr	Asn	Leu	Gln	Arg	Thr	Ser	Ala	Ile	Asn	Gly	Glu	Asp	Ile	Asp		
				1075			1080						1085			
Arg	Ala	Val	Ser	Met	Met	Leu	Glu	Asn	Leu	Gly	Leu	Leu	Ser	Arg	Ile	
				1090			1095						1100			
Leu	Ser	Val	Val	Val	Asp	Ser	Ile	Glu	Ile	Pro	Ile	Lys	Ser	Asn	Gly	
1105					1110					1115					1120	
Arg	Leu	Ile	Cys	Cys	Gln	Ile	Ser	Arg	Thr	Leu	Arg	Glu	Thr	Ser	Trp	

Asn	Asn	Met	Glu	Ile	Val	Gly	Val	Thr	Ser	Pro	Ser	Ile	Thr	Thr	Cys	1125	1130	1135
Met	Asp	Val	Ile	Tyr	Ala	Thr	Ser	Ser	His	Leu	Lys	Gly	Ile	Ile	Ile	1140	1145	1150
Glu	Lys	Phe	Ser	Thr	Asp	Arg	Thr	Thr	Arg	Gly	Gln	Arg	Gly	Pro	Lys	1155	1160	1165
Ser	Pro	Trp	Val	Gly	Ser	Ser	Thr	Gln	Glu	Lys	Lys	Leu	Val	Pro	Val	1170	1175	1180
Tyr	Asn	Arg	Gln	Ile	Leu	Ser	Lys	Gln	Gln	Arg	Glu	Gln	Leu	Glu	Ala	1185	1190	1195
Ile	Gly	Lys	Met	Arg	Trp	Val	Tyr	Lys	Gly	Thr	Pro	Gly	Leu	Arg	Arg	1205	1210	1215
Leu	Leu	Asn	Lys	Ile	Cys	Leu	Gly	Ser	Leu	Gly	Ile	Ser	Tyr	Lys	Cys	1220	1225	1230
Val	Lys	Pro	Leu	Leu	Pro	Arg	Phe	Met	Ser	Val	Asn	Phe	Leu	His	Arg	1235	1240	1245
Leu	Ser	Val	Ser	Ser	Arg	Pro	Met	Glu	Phe	Pro	Ala	Ser	Val	Pro	Ala	1250	1255	1260
Tyr	Arg	Thr	Thr	Asn	Tyr	His	Phe	Asp	Thr	Ser	Pro	Ile	Asn	Gln	Ala	1265	1270	1275
Leu	Ser	Glu	Arg	Phe	Gly	Asn	Glu	Asp	Ile	Asn	Leu	Val	Phe	Gln	Asn	1285	1290	1295
Ala	Ile	Ser	Cys	Gly	Ile	Ser	Ile	Met	Ser	Val	Val	Glu	Gln	Leu	Thr	1300	1305	1310
Gly	Arg	Ser	Pro	Lys	Gln	Leu	Val	Leu	Ile	Pro	Gln	Leu	Glu	Glu	Ile	1315	1320	1325
Asp	Ile	Met	Pro	Pro	Pro	Val	Phe	Gln	Gly	Lys	Phe	Asn	Tyr	Lys	Leu	1330	1335	1340
Val	Asp	Lys	Ile	Thr	Ser	Asp	Gln	His	Ile	Phe	Ser	Pro	Asp	Lys	Ile	1345	1350	1355
Asp	Met	Leu	Thr	Leu	Gly	Lys	Met	Leu	Met	Pro	Thr	Ile	Lys	Gly	Gln	1365	1370	1375
Lys	Thr	Asp	Gln	Phe	Leu	Asn	Lys	Arg	Glu	Asn	Tyr	Phe	His	Gly	Asn	1380	1385	1390
Asn	Leu	Ile	Glu	Ser	Leu	Ser	Ala	Ala	Leu	Ala	Cys	His	Trp	Cys	Gly	1395	1400	1405
Ile	Leu	Thr	Glu	Gln	Cys	Ile	Glu	Asn	Asn	Ile	Phe	Lys	Lys	Asp	Trp	1410	1415	1420
Gly	Asp	Gly	Phe	Ile	Ser	Asp	His	Ala	Phe	Met	Asp	Phe	Lys	Ile	Phe	1425	1430	1435
Leu	Cys	Val	Phe	Lys	Thr	Lys	Leu	Leu	Cys	Ser	Trp	Gly	Ser	Gln	Gly	1445	1450	1455
Lys	Asn	Ile	Lys	Asp	Glu	Asp	Ile	Val	Asp	Glu	Ser	Ile	Asp	Lys	Leu	1460	1465	1470
Leu	Arg	Ile	Asp	Asn	Thr	Phe	Trp	Arg	Met	Phe	Ser	Lys	Val	Met	Phe	1475	1480	1485
Glu	Pro	Lys	Val	Lys	Lys	Arg	Ile	Met	Leu	Tyr	Asp	Val	Lys	Phe	Leu	1490	1495	1500
Ser	Leu	Val	Gly	Tyr	Ile	Gly	Phe	Lys	Asn	Trp	Phe	Ile	Glu	Gln	Leu	1505	1510	1515
Arg	Ser	Ala	Glu	Leu	His	Glu	Ile	Pro	Trp	Ile	Val	Asn	Ala	Glu	Gly	1525	1530	1535
Asp	Leu	Val	Glu	Ile	Lys	Ser	Ile	Lys	Ile	Tyr	Leu	Gln	Leu	Ile	Glu	1540	1545	1550
Gln	Ser	Leu	Phe	Leu	Arg	Ile	Thr	Val	Leu	Asn	Tyr	Thr	Asp	Met	Ala	1555	1560	1565
His	Ala	Leu	Thr	Arg	Leu	Ile	Arg	Lys	Lys	Leu	Met	Cys	Asp	Asn	Ala	1570	1575	1580
Leu	Leu	Thr	Pro	Ile	Ser	Ser	Pro	Met	Val	Asn	Leu	Thr	Gln	Val	Ile	1585	1590	1595
																1605	1610	1615

Asp Pro Thr Thr Gln Leu Asp Tyr Phe Pro Lys Ile Thr Phe Glu Arg
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 Leu Lys Asn Tyr Asp Thr Ser Ser Asn Tyr Ala Lys Gly Lys Leu Thr
 1635 1640 1645
 Arg Asn Tyr Met Ile Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn
 1650 1655 1660
 Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile
 1665 1670 1675 1680
 Gly Lys Leu Met Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly
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 Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp
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 Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr
 1715 1720 1725
 Pro Leu Glu Tyr Gln Arg Val Ile Gly Glu Leu Ser Arg Ile Ile Asp
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 Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Val Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asp Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Thr Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Lys Asp Cys Asn
 1810 1815 1820
 Val Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
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 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly
 1845 1850 1855
 His His Asn Ser Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met
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 Lys Ile Ala Val Cys Asn Asp Phe Tyr Ala Ala Lys Lys Leu Asp Asn
 1875 1880 1885
 Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile
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 Pro Ile Asn Lys Lys Glu Leu Asp Arg Gln Arg Arg Leu Leu Thr Leu
 1905 1910 1915 1920
 Gln Ser Asn His Ser Ser Val Ala Thr Val Gly Gly Ser Lys Ile Ile
 1925 1930 1935
 Glu Ser Lys Trp Leu Thr Asn Lys Ala Ser Thr Ile Ile Asp Trp Leu
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 Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe
 1955 1960 1965
 Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn
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Gln	Lys	Glu	Leu	Lys	Arg	Tyr	Val	Ile	Lys	Gln	Glu	Tyr	Leu	Asn	Asp
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Gly	Arg	Met	Phe	Ala	Met	Gln	Pro	Gly	Lys	Gln	Arg	Gln	Ile	Gln	Ile
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Thr	Leu	Thr	Lys	Tyr	Gly	Asp	Leu	Asp	Leu	Gln	Arg	Ile	Met	Glu	Ile
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Lys	Ser	Glu	Leu	Ser	Ser	Ile	Lys	Thr	Arg	Lys	Asn	Asp	Ser	Tyr	Asn
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Asn	Tyr	Ile	Ala	Arg	Ala	Ser	Ile	Val	Thr	Asp	Leu	Ser	Lys	Phe	Asn
625					630					635					640
Gln	Ala	Phe	Arg	Tyr	Glu	Thr	Thr	Ala	Ile	Cys	Ala	Asp	Val	Ala	Asp
				645					650					655	
Glu	Leu	His	Gly	Thr	Gln	Ser	Leu	Phe	Cys	Trp	Leu	His	Leu	Ile	Val
			660					665					670		
Pro	Met	Thr	Thr	Met	Ile	Cys	Ala	Tyr	Arg	His	Ala	Pro	Pro	Glu	Thr
		675					680					685			
Lys	Gly	Glu	Tyr	Asp	Ile	Asp	Lys	Ile	Gln	Glu	Gln	Ser	Gly	Leu	Tyr
	690					695					700				
Arg	Tyr	His	Met	Gly	Gly	Ile	Glu	Gly	Trp	Cys	Gln	Lys	Leu	Trp	Thr
705					710					715					720
Met	Glu	Ala	Ile	Ser	Leu	Leu	Asp	Val	Val	Ser	Val	Lys	Thr	Arg	Cys
				725				730						735	
Gln	Met	Thr	Ser	Leu	Leu	Asn	Gly	Asp	Asn	Gln	Ser	Ile	Asp	Val	Ser
			740					745					750		
Lys	Pro	Val	Lys	Leu	Ser	Glu	Gly	Ile	Asp	Glu	Val	Lys	Ala	Asp	Tyr
		755					760					765			
Ser	Leu	Ala	Ile	Arg	Met	Leu	Lys	Glu	Ile	Arg	Asp	Ala	Tyr	Lys	Asn
	770					775					780				
Ile	Gly	His	Lys	Leu	Lys	Glu	Gly	Glu	Thr	Tyr	Ile	Ser	Arg	Asp	Leu
785					790					795					800
Gln	Phe	Ile	Ser	Lys	Val	Ile	Gln	Ser	Glu	Gly	Val	Met	His	Pro	Thr
				805					810					815	
Pro	Ile	Lys	Lys	Ile	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	Ile	Leu
			820					825					830		
Asp	Asp	Ile	Lys	Thr	Ser	Ala	Glu	Ser	Ile	Gly	Ser	Leu	Cys	Gln	Glu
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Leu	Glu	Phe	Arg	Gly	Glu	Ser	Ile	Leu	Val	Ser	Leu	Ile	Leu	Arg	Asn
	850					855					860				
Phe	Trp	Leu	Tyr	Asn	Leu	Tyr	Met	Tyr	Glu	Ser	Lys	Gln	His	Pro	Leu
865					870					875					880
Ala	Gly	Lys	Gln	Leu	Phe	Lys	Gln	Leu	Asn	Lys	Thr	Leu	Thr	Ser	Val
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Gln	Arg	Phe	Phe	Glu	Leu	Lys	Lys	Glu	Asn	Asp	Val	Val	Asp	Leu	Trp
			900					905					910		
Met	Asn	Ile	Pro	Met	Gln	Phe	Gly	Gly	Gly	Asp	Pro	Val	Val	Phe	Tyr
		915					920					925			
Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	Ile	Ser
	930					935					940				
His	Val	Asp	Leu	Leu	Leu	Lys	Val	Ser	Asn	Asn	Ile	Lys	Asp	Glu	Thr
945					950					955					960
Lys	Ile	Arg	Phe	Phe	Lys	Ala	Leu	Leu	Ser	Ile	Glu	Lys	Asn	Glu	Arg
				965					970					975	
Ala	Thr	Leu	Thr	Thr	Leu	Met	Arg	Asp	Pro	Gln	Ala	Val	Gly	Ser	Glu
			980					985					990		
Arg	Gln	Ala	Lys	Val	Thr	Ser	Asp	Ile	Asn	Arg	Thr	Ala	Val	Thr	Ser

995	1000	1005
Ile Leu Ser Leu Ser Pro Asn Gln Leu Phe Cys Asp Ser Ala Ile His		
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Tyr Ser Arg Asn Glu Glu Val Gly Ile Ile Ala Asp Asn Ile Thr		
1025	1030	1035
Pro Val Tyr Pro His Gly Leu Arg Val Leu Tyr Glu Ser Leu Pro Phe		1040
	1045	1050
His Lys Ala Glu Lys Val Val Asn Met Ile Ser Gly Thr Lys Ser Ile		1055
	1060	1065
Thr Asn Leu Leu Gln Arg Thr Ser Ala Ile Asn Gly Glu Asp Ile Asp		1070
	1075	1080
Arg Ala Val Ser Met Met Leu Glu Asn Leu Gly Leu Leu Ser Arg Ile		1085
	1090	1095
Leu Ser Val Ile Ile Asn Ser Ile Glu Ile Pro Ile Lys Ser Asn Gly		1100
1105	1110	1115
Arg Leu Ile Cys Cys Gln Ile Ser Lys Thr Leu Arg Glu Lys Ser Trp		1120
	1125	1130
Asn Asn Met Glu Ile Val Gly Val Thr Ser Pro Ser Ile Val Thr Cys		1135
	1140	1145
Met Asp Val Val Tyr Ala Thr Ser Ser His Leu Lys Gly Ile Ile Ile		1150
	1155	1160
Glu Lys Phe Ser Thr Asp Lys Thr Thr Arg Gly Gln Arg Gly Pro Lys		1165
1170	1175	1180
Ser Pro Trp Val Gly Ser Ser Thr Gln Glu Lys Lys Leu Val Pro Val		
1185	1190	1195
Tyr Asn Arg Gln Ile Leu Ser Lys Gln Gln Lys Glu Gln Leu Glu Ala		1200
	1205	1210
Ile Gly Lys Met Arg Trp Val Tyr Lys Gly Thr Pro Gly Leu Arg Arg		1215
	1220	1225
Leu Leu Asn Lys Ile Cys Ile Gly Ser Leu Gly Ile Ser Tyr Lys Cys		1230
	1235	1240
Val Lys Pro Leu Leu Pro Arg Phe Met Ser Val Asn Phe Leu His Arg		1245
	1250	1255
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala		1260
1265	1270	1275
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala		1280
	1285	1290
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn		1295
	1300	1305
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr		1310
	1315	1320
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Glu Ile		1325
	1330	1335
Asp Ile Met Pro Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu		1340
1345	1350	1355
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile		1360
	1365	1370
Asp Ile Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln		1375
	1380	1385
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn		1390
	1395	1400
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly		1405
	1410	1415
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Arg Lys Asp Trp		1420
1425	1430	1435
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Val Phe		1440
	1445	1450
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly		1455
	1460	1465
Lys Asn Val Lys Asp Glu Asp Ile Ile Asp Glu Ser Ile Asp Lys Leu		1470
	1475	1480
		1485

Leu	Arg	Ile	Asp	Asn	Thr	Phe	Trp	Arg	Met	Phe	Ser	Lys	Val	Met	Phe		
	1490					1495					1500						
Glu	Ser	Lys	Val	Lys	Lys	Arg	Ile	Met	Leu	Tyr	Asp	Val	Lys	Phe	Leu		
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Ser	Leu	Val	Gly	Tyr	Ile	Gly	Phe	Lys	Asn	Trp	Phe	Ile	Glu	Gln	Leu		
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Arg	Val	Val	Glu	Leu	His	Glu	Val	Pro	Trp	Ile	Val	Asn	Ala	Glu	Gly		
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Glu	Leu	Val	Glu	Ile	Lys	Ser	Ile	Lys	Ile	Tyr	Leu	Gln	Leu	Ile	Glu		
		1555					1560					1565					
Gln	Ser	Leu	Ser	Leu	Arg	Ile	Thr	Val	Leu	Asn	Tyr	Thr	Asp	Met	Ala		
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His	Ala	Leu	Thr	Arg	Leu	Ile	Arg	Lys	Lys	Leu	Met	Cys	Asp	Asn	Ala		
	1585				1590					1595					1600		
Leu	Phe	Asn	Pro	Ser	Ser	Ser	Pro	Met	Phe	Asn	Leu	Thr	Gln	Val	Ile		
			1605						1610						1615		
Asp	Pro	Thr	Thr	Gln	Leu	Asp	Tyr	Phe	Pro	Arg	Ile	Ile	Phe	Glu	Arg		
			1620					1625					1630				
Leu	Lys	Ser	Tyr	Asp	Thr	Ser	Ser	Asp	Tyr	Asn	Lys	Gly	Lys	Leu	Thr		
	1635						1640					1645					
Arg	Asn	Tyr	Met	Thr	Leu	Leu	Pro	Trp	Gln	His	Val	Asn	Arg	Tyr	Asn		
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Phe	Val	Phe	Ser	Ser	Thr	Gly	Cys	Lys	Val	Ser	Leu	Lys	Thr	Cys	Ile		
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Gly	Lys	Leu	Ile	Lys	Asp	Leu	Asn	Pro	Lys	Val	Leu	Tyr	Phe	Ile	Gly		
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Glu	Gly	Ala	Gly	Asn	Trp	Met	Ala	Arg	Thr	Ala	Cys	Glu	Tyr	Pro	Asp		
		1700					1705					1710					
Ile	Lys	Phe	Val	Tyr	Arg	Ser	Leu	Lys	Asp	Asp	Leu	Asp	His	His	Tyr		
	1715				1720							1725					
Pro	Leu	Glu	Tyr	Gln	Arg	Val	Ile	Gly	Asp	Leu	Asn	Arg	Val	Ile	Asp		
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Ser	Gly	Glu	Gly	Leu	Ser	Met	Glu	Thr	Thr	Asp	Ala	Thr	Gln	Lys	Thr		
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His	Trp	Asp	Leu	Ile	His	Arg	Ile	Ser	Lys	Asp	Ala	Leu	Leu	Ile	Thr		
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Leu	Cys	Asp	Ala	Glu	Phe	Lys	Asn	Arg	Asp	Asp	Phe	Phe	Lys	Met	Val		
		1780					1785					1790					
Ile	Leu	Trp	Arg	Lys	His	Val	Leu	Ser	Cys	Arg	Ile	Cys	Thr	Ala	Tyr		
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Gly	Thr	Asp	Leu	Tyr	Leu	Phe	Ala	Lys	Tyr	His	Ala	Val	Asp	Cys	Asn		
	1810				1815						1820						
Ile	Lys	Leu	Pro	Phe	Phe	Val	Arg	Ser	Val	Ala	Thr	Phe	Ile	Met	Gln		
	1825				1830					1835					1840		
Gly	Ser	Lys	Leu	Ser	Gly	Ser	Glu	Cys	Tyr	Ile	Leu	Leu	Thr	Leu	Gly		
			1845					1850							1855		
His	His	Asn	Asn	Leu	Pro	Cys	His	Gly	Glu	Ile	Gln	Asn	Ser	Lys	Met		
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Arg	Ile	Ala	Val	Cys	Asn	Asp	Phe	Tyr	Ala	Ser	Lys	Lys	Leu	Asp	Asn		
	1875					1880						1885					
Lys	Ser	Ile	Glu	Ala	Asn	Cys	Lys	Ser	Leu	Leu	Ser	Gly	Leu	Arg	Ile		
	1890				1895						1900						
Pro	Ile	Asn	Lys	Lys	Glu	Leu	Asn	Arg	Gln	Lys	Lys	Leu	Leu	Thr	Leu		
	1905				1910					1915					1920		
Gln	Ser	Asn	His	Ser	Ser	Ile	Ala	Thr	Val	Gly	Gly	Ser	Lys	Ile	Ile		
			1925					1930							1935		
Glu	Ser	Lys	Trp	Leu	Lys	Asn	Lys	Ala	Ser	Thr	Ile	Ile	Asp	Trp	Leu		
		1940						1945					1950				
Glu	His	Ile	Leu	Asn	Ser	Pro	Lys	Gly	Glu	Leu	Asn	Tyr	Asp	Phe	Phe		
	1955					1960						1965					
Glu	Ala	Leu	Glu	Asn	Thr	Tyr	Pro	Asn	Met	Ile	Lys	Leu	Ile	Asp	Asn		

1970		1975		1980
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Leu Val Ser Lys Lys				2000
		2005		

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<400> 333

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			20					25					30		
Cys Leu Leu Lys Arg Pro Tyr Leu Lys Lys Asp Asn Thr Ala Lys Val															
		35					40					45			
Ala Val Glu Asn Pro Val Val Glu His Val Arg Leu Arg Asn Ala Val															
	50					55					60				
Met Thr Lys Met Lys Ile Ser Asp Tyr Lys Val Val Glu Pro Ile Asn															
65					70					75					80
Met Gln His Glu Ile Met Lys Asn Ile His Ser Cys Glu Leu Thr Leu															
				85				90						95	
Leu Lys Gln Phe Leu Thr Arg Ser Lys Asn Ile Ser Ser Leu Lys Leu															
			100				105							110	
Ser Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr Ser Asp Asn Thr															
	115					120						125			
Ser Ile Leu Asn Phe Ile Asp Val Glu Phe Ile Pro Val Trp Val Ser															
	130					135						140			
Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn Lys Leu Ile Leu Glu Phe															
145					150					155					160
Arg Arg Glu Glu Val Ile Arg Thr Gly Ser Ile Leu Cys Arg Ser Leu															
				165					170						175
Gly Lys Leu Val Phe Ile Val Ser Ser Tyr Gly Cys Val Val Lys Ser															
			180					185						190	
Asn Lys Ser Lys Arg Val Ser Phe Phe Thr Tyr Asn Gln Leu Leu Thr															
	195					200						205			
Trp Lys Asp Val Met Leu Ser Arg Phe Asn Ala Asn Phe Cys Ile Trp															
	210					215						220			
Val Ser Asn Asn Leu Asn Lys Asn Gln Glu Gly Leu Gly Phe Arg Ser															
225					230					235					240
Asn Leu Gln Gly Met Leu Thr Asn Lys Leu Tyr Glu Thr Val Asp Tyr															
				245					250					255	
Met Leu Ser Leu Cys Ser Asn Glu Gly Phe Ser Leu Val Lys Glu Phe															
			260				265						270		
Glu Gly Phe Ile Met Ser Glu Ile Leu Lys Ile Thr Glu His Ala Gln															
	275						280						285		
Phe Ser Thr Arg Phe Arg Asn Thr Leu Leu Asn Gly Leu Thr Glu Gln															
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Leu Ser Met Leu Lys Ala Lys Asn Arg Ser Arg Val Leu Gly Thr Ile															
305					310					315					320
Leu Glu Asn Asn Asp Tyr Pro Met Tyr Glu Val Val Leu Lys Leu Leu															
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Gly Asp Thr Leu Lys Ser Ile Lys Leu Leu Ile Asn Lys Asn Leu Glu															
			340				345						350		
Asn Ala Ala Glu Leu Tyr Tyr Ile Phe Arg Ile Phe Gly His Pro Met															
	355					360						365			
Val Asp Glu Arg Glu Ala Met Asp Ala Val Lys Leu Asn Asn Glu Ile															
	370					375						380			

Thr	Lys	Ile	Leu	Lys	Leu	Glu	Ser	Leu	Thr	Glu	Leu	Arg	Gly	Ala	Phe
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Ile	Leu	Arg	Ile	Ile	Lys	Gly	Phe	Val	Asp	Asn	Asn	Lys	Arg	Trp	Pro
				405					410					415	
Lys	Ile	Lys	Asn	Leu	Lys	Val	Leu	Ser	Lys	Arg	Trp	Val	Met	Tyr	Phe
			420					425					430		
Lys	Ala	Lys	Ser	Tyr	Pro	Ser	Gln	Leu	Glu	Leu	Ser	Val	Gln	Asp	Phe
		435					440					445			
Leu	Glu	Leu	Ala	Ala	Val	Gln	Phe	Glu	Gln	Glu	Phe	Ser	Val	Pro	Glu
	450					455					460				
Lys	Thr	Asn	Leu	Glu	Met	Val	Leu	Asn	Asp	Lys	Ala	Ile	Ser	Pro	Pro
465					470					475					480
Lys	Lys	Leu	Ile	Trp	Ser	Val	Tyr	Pro	Lys	Asn	Tyr	Leu	Pro	Glu	Ile
			485						490					495	
Ile	Lys	Asn	Gln	Tyr	Leu	Glu	Glu	Val	Phe	Asn	Ala	Ser	Asp	Ser	Gln
			500					505					510		
Arg	Thr	Arg	Arg	Val	Leu	Glu	Phe	Tyr	Leu	Lys	Asp	Cys	Lys	Phe	Asp
		515					520					525			
Gln	Lys	Asp	Leu	Lys	Arg	Tyr	Val	Leu	Lys	Gln	Glu	Tyr	Leu	Asn	Asp
	530					535					540				
Lys	Asp	His	Ile	Val	Ser	Leu	Thr	Gly	Lys	Glu	Arg	Glu	Leu	Ser	Val
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Gly	Arg	Met	Phe	Ala	Met	Gln	Pro	Gly	Lys	Gln	Arg	Gln	Ile	Gln	Ile
			565					570						575	
Leu	Ala	Glu	Lys	Leu	Leu	Ala	Asp	Asn	Ile	Val	Pro	Phe	Phe	Pro	Glu
			580				585						590		
Thr	Leu	Thr	Lys	Tyr	Gly	Asp	Leu	Asp	Leu	Gln	Arg	Ile	Met	Glu	Met
		595				600						605			
Lys	Ser	Glu	Leu	Ser	Ser	Ile	Lys	Thr	Arg	Lys	Asn	Asp	Ser	Tyr	Asn
	610					615					620				
Asn	Tyr	Ile	Ala	Arg	Ala	Ser	Ile	Val	Thr	Asp	Leu	Ser	Lys	Phe	Asn
625					630					635					640
Gln	Ala	Phe	Arg	Tyr	Glu	Thr	Thr	Ala	Ile	Cys	Ala	Asp	Val	Ala	Asp
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Glu	Leu	His	Gly	Thr	Gln	Ser	Leu	Phe	Cys	Trp	Leu	His	Leu	Ile	Val
			660					665					670		
Pro	Met	Thr	Thr	Met	Ile	Cys	Ala	Tyr	Arg	His	Ala	Pro	Pro	Glu	Thr
		675					680					685			
Lys	Gly	Glu	Tyr	Asp	Ile	Asp	Lys	Ile	Glu	Glu	Gln	Ser	Gly	Leu	Tyr
	690					695					700				
Arg	Tyr	His	Met	Gly	Gly	Ile	Glu	Gly	Trp	Cys	Gln	Lys	Leu	Trp	Thr
705					710					715					720
Met	Glu	Ala	Ile	Ser	Leu	Leu	Asp	Val	Val	Ser	Val	Lys	Thr	Arg	Cys
			725						730					735	
Gln	Met	Thr	Ser	Leu	Leu	Asn	Gly	Asp	Asn	Gln	Ser	Ile	Asp	Val	Ser
			740					745					750		
Lys	Pro	Val	Lys	Leu	Ser	Glu	Gly	Ile	Asp	Glu	Val	Lys	Ala	Asp	Tyr
		755					760					765			
Ser	Leu	Ala	Ile	Lys	Met	Leu	Lys	Glu	Ile	Arg	Asp	Ala	Tyr	Lys	Asn
	770					775					780				
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785					790					795					800
Gln	Phe	Ile	Ser	Lys	Val	Ile	Gln	Ser	Glu	Gly	Val	Met	His	Pro	Thr
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Pro	Ile	Lys	Lys	Ile	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	Ile	Leu
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Asp	Asp	Ile	Lys	Thr	Ser	Ala	Glu	Ser	Ile	Gly	Ser	Leu	Cys	Gln	Glu
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Leu	Glu	Phe	Arg	Gly	Glu	Ser	Met	Leu	Val	Ser	Leu	Ile	Leu	Arg	Asn
	850					855					860				
Phe	Trp	Leu	Tyr	Asn	Leu	Tyr	Met	His	Glu	Ser	Lys	Gln	His	Pro	Leu

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Ala	Gly	Lys	Gln	Leu	Phe	Lys	Gln	Leu	Asn	Lys	Thr	Leu	Thr	Ser Val
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Gln	Arg	Phe	Phe	Glu	Leu	Lys	Lys	Glu	Asn	Asp	Val	Val	Asp	Leu Trp
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Met	Asn	Ile	Pro	Met	Gln	Phe	Gly	Gly	Gly	Asp	Pro	Val	Val	Phe Tyr
		915					920					925		
Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	Ile Ser
	930					935					940			
His	Val	Asp	Leu	Leu	Leu	Lys	Val	Ser	Asn	Asn	Ile	Lys	Asn	Glu Thr
945					950				955					960
Lys	Ile	Arg	Phe	Phe	Lys	Ala	Leu	Leu	Ser	Ile	Glu	Lys	Asn	Glu Arg
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Ala	Thr	Leu	Thr	Thr	Leu	Met	Arg	Asp	Pro	Gln	Ala	Val	Gly	Ser Glu
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Ile	Leu	Ser	Leu	Ser	Pro	Asn	Gln	Leu	Phe	Cys	Asp	Ser	Ala	Ile His
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1025					1030				1035					1040
Pro	Val	Tyr	Pro	His	Gly	Leu	Arg	Val	Leu	Tyr	Glu	Ser	Leu	Pro Phe
				1045					1050					1055
His	Lys	Ala	Glu	Lys	Val	Val	Asn	Met	Ile	Ser	Gly	Thr	Lys	Ser Ile
		1060					1065					1070		
Thr	Asn	Leu	Leu	Gln	Arg	Thr	Ser	Ala	Ile	Asn	Gly	Glu	Asp	Ile Asp
	1075					1080					1085			
Arg	Ala	Val	Ser	Met	Met	Leu	Glu	Asn	Leu	Gly	Leu	Leu	Ser	Arg Ile
	1090					1095					1100			
Leu	Ser	Val	Ile	Ile	Asn	Ser	Ile	Glu	Ile	Pro	Ile	Lys	Ser	Asn Gly
1105				1110					1115					1120
Arg	Leu	Ile	Cys	Cys	Gln	Ile	Ser	Lys	Thr	Leu	Arg	Glu	Lys	Ser Trp
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Asn	Asn	Met	Glu	Ile	Val	Gly	Val	Thr	Ser	Pro	Ser	Ile	Val	Thr Cys
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Glu	Lys	Phe	Ser	Thr	Asp	Lys	Thr	Thr	Arg	Gly	Gln	Arg	Gly	Pro Lys
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Ser	Pro	Trp	Val	Gly	Ser	Ser	Thr	Gln	Glu	Lys	Lys	Leu	Val	Pro Val
1185				1190				1195						1200
Tyr	Asn	Arg	Gln	Ile	Leu	Ser	Lys	Gln	Gln	Lys	Glu	Gln	Leu	Glu Ala
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Ile	Gly	Lys	Met	Arg	Trp	Val	Tyr	Lys	Gly	Thr	Pro	Gly	Leu	Arg Arg
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<213> human metapneumo virus

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<210> 339
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Arg	Tyr	Leu	Leu	Ile	Arg	Ser	Asn	Tyr	Leu	Leu	Asn	Gln	Leu	Leu	Arg
		35					40					45			
Asn	Thr	Asp	Arg	Ala	Asp	Gly	Leu	Ser	Ile	Ile	Ser	Gly	Ala	Gly	Arg
	50					55					60				
Glu	Asp	Arg	Thr	Gln	Asp	Phe	Val	Leu	Gly	Ser	Thr	Asn	Val	Val	Gln
65					70					75					80
Gly	Tyr	Ile	Asp	Asp	Asn	Gln	Ser	Ile	Thr	Lys	Ala	Ala	Ala	Cys	Tyr
			85					90						95	
Ser	Leu	His	Asn	Ile	Ile	Lys	Gln	Leu	Gln	Glu	Val	Glu	Val	Arg	Gln
			100					105						110	
Ala	Arg	Asp	Ser	Lys	Leu	Ser	Asp	Ser	Lys	His	Val	Ala	Leu	His	Asn
		115					120					125			
Leu	Ile	Leu	Ser	Tyr	Met	Glu	Met	Ser	Lys	Thr	Pro	Ala	Ser	Leu	Ile
	130					135					140				
Asn	Asn	Leu	Lys	Arg	Leu	Pro	Arg	Glu	Lys	Leu	Lys	Lys	Leu	Ala	Lys
145					150					155					160
Leu	Ile	Ile	Asp	Leu	Ser	Ala	Gly	Ala	Asp	Asn	Asp	Ser	Ser	Tyr	Ala
			165						170					175	
Leu	Gln	Asp	Ser	Glu	Ser	Thr	Asn	Gln	Val	Gln					
			180					185							

<210> 340
 <211> 187
 <212> PRT
 <213> human metapneumo virus

<400> 340

Met	Ser	Arg	Lys	Ala	Pro	Cys	Lys	Tyr	Glu	Val	Arg	Gly	Lys	Cys	Asn
1				5					10					15	
Arg	Gly	Ser	Asp	Cys	Lys	Phe	Asn	His	Asn	Tyr	Trp	Ser	Trp	Pro	Asp
			20					25					30		
Arg	Tyr	Leu	Leu	Leu	Arg	Ser	Asn	Tyr	Leu	Leu	Asn	Gln	Leu	Leu	Arg
		35					40					45			
Asn	Thr	Asp	Lys	Ala	Asp	Gly	Leu	Ser	Ile	Ile	Ser	Gly	Ala	Gly	Arg
	50					55					60				
Glu	Asp	Arg	Thr	Gln	Asp	Phe	Val	Leu	Gly	Ser	Thr	Asn	Val	Val	Gln
65					70					75					80
Gly	Tyr	Ile	Asp	Asp	Asn	Gln	Gly	Ile	Thr	Lys	Ala	Ala	Ala	Cys	Tyr
			85					90						95	
Ser	Leu	His	Asn	Ile	Ile	Lys	Gln	Leu	Gln	Glu	Thr	Glu	Val	Arg	Gln
			100					105						110	
Ala	Arg	Asp	Asn	Lys	Leu	Ser	Asp	Ser	Lys	His	Val	Ala	Leu	His	Asn
		115					120						125		

Leu Ile Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile
 130 135 140
 Asn Asn Leu Lys Lys Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Arg
 145 150 155 160
 Leu Ile Ile Asp Leu Ser Ala Gly Thr Asp Asn Asp Ser Ser Tyr Ala
 165 170 175
 Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln
 180 185

<210> 341
 <211> 187
 <212> PRT
 <213> human metapneumo virus

<400> 341
 Met Ser Arg Lys Ala Pro Cys Lys Tyr Glu Val Arg Gly Lys Cys Asn
 1 5 10 15
 Arg Gly Ser Glu Cys Lys Phe Asn His Asn Tyr Trp Ser Trp Pro Asp
 20 25 30
 Arg Tyr Leu Leu Arg Ser Asn Tyr Leu Leu Asn Gln Leu Leu Arg
 35 40 45
 Asn Thr Asp Lys Ala Asp Gly Leu Ser Ile Ile Ser Gly Ala Gly Arg
 50 55 60
 Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln
 65 70 75 80
 Gly Tyr Ile Asp Asn Asn Gln Gly Ile Thr Lys Ala Ala Ala Cys Tyr
 85 90 95
 Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Ile Glu Val Arg Gln
 100 105 110
 Ala Arg Asp Asn Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn
 115 120 125
 Leu Ile Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile
 130 135 140
 Asn Asn Leu Lys Lys Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Lys
 145 150 155 160
 Leu Ile Ile Asp Leu Ser Ala Gly Thr Asp Asn Asp Ser Ser Tyr Ala
 165 170 175
 Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln
 180 185

<210> 342
 <211> 564
 <212> DNA
 <213> human metapneumo virus

<400> 342
 atgtctcgca aggctccgtg caaatatgaa gtgcggggca aatgcaatag aggaagttag 60
 tgcaagttta accacaatta ctggagttgg ccagatagat acttattaat aagatcaaatt 120
 tattttattaa atcaactttt aaggaacact gatagagctg atggcttatc aataatatca 180
 ggagcaggca gagaagatag gacacaagat tttgtcctag gttccaccaa tgtggttcaa 240
 gggttatattg atgataacca aagcataaca aaagctgcag cctgttacag tctacataat 300
 ataatacaaac aactacaaga agttgaagtt aggcaggcta gagataacaa actatctgac 360
 agcaaacatg tagcacttca caacttagtc ctatcttata tggagatgag caaaactcct 420
 gcattctttaa tcaacaatct caagagactg ccgagagaga aactgaaaaa attagcaaag 480
 ctcataattg acttatcagc aggtgctgaa aatgactctt catatgcctt gcaagacagt 540
 gaaagcacta atcaagtgcga gtga 564

<210> 343
 <211> 564

<212> DNA
<213> human metapneumo virus

<400> 343
atgtctcgca aggctccatg caaatatgaa gtgcgggggca aatgcaacag aggaagtgtg 60
tgtaagttta accacaatta ctggagttgg ccagatagat acttattaat aagatcaaac 120
tatctattaa atcagctttt aaggaacact gatagagctg atggcctatc aataatatca 180
ggcgcaggca gagaagacag aacgcaagat tttgttctag gttccaccaa tgtggttcaa 240
ggttatattg atgataacca aagcataaca aaagctgcag cctgctacag tctacacaac 300
ataatcaagc aactacaaga agttgaagtt aggcaggcta gagatagcaa actatctgac 360
agcaagcatg tggcactcca taacttaatc ttatcttaca tggagatgag caaaactccc 420
gcatctttaa tcaacaatct taaaagactg ccgagagaaa aactgaaaaa attagcaaag 480
ctgataattg acttatcagc aggcgctgac aatgactcct catatgccct gcaagacagt 540
gaaagcacta atcaagtgtga gtga 564

<210> 344
<211> 564
<212> DNA
<213> human metapneumo virus

<400> 344
atgtctcgta aggctccatg caaatatgaa gtgcgggggca aatgcaacag agggagtgtg 60
tgcaaatcca atcacaatta ctggagttgg cctgatagat atttattgtt aagatcaaact 120
tatctcttaa atcagctttt aagaaacaca gataaggctg atgggtttgtc aataatatca 180
ggagcaggta gagaagatag aactcaagac tttgttcttg gttctactaa tgtggttcaa 240
gggtacattg atgacaacca aggaataacc aaggctgcag cttgctatag tctacacaac 300
ataatcaagc aactacaaga aacagaagta agacaggcta gagacaacaa gctttctgat 360
agcaaacatg tggcgtccca caacttgata ttatcctata tggagatgag caaaactcct 420
gcatctctaa tcaacaacct aaagaaaacta ccaagggaaa aactgaagaa attagcaaga 480
ttaataattg atttatcagc aggaactgac aatgactcct catatgcctt gcaagacagt 540
gaaagcacta atcaagtgtga gtaa 564

<210> 345
<211> 564
<212> DNA
<213> human metapneumo virus

<400> 345
atgtctcgca aagctccatg caaatatgaa gtacgggggca agtgcaacag ggggaagtgtg 60
tgcaaatcca accacaatta ctggagctgg cctgatagggt atttattgtt aagatcaaact 120
tatctcttga atcagctttt aagaaacact gataaggctg atgggtttgtc aataatatca 180
ggagcaggta gagaagatag gactcaagac tttgttcttg gttctactaa tgtggttcaa 240
gggtacattg ataacaatca aggaataaca aaggctgcag cttgctatag tctacataac 300
ataataaaaac agctacaaga aatagaagta agacaggcta gagataataa gctttctgac 360
agcaaacatg tggcacttca caacttgata ttatcctata tggagatgag caaaactcct 420
gcatccctga ttaataacct aaagaaaacta ccaagagaaa aactgaagaa attagcgaaa 480
ttaataattg atttatcagc aggaactgat aatgactcct catatgcctt gcaagacagt 540
gaaagcacta atcaagtgtga gtaa 564

<210> 346
<211> 71
<212> PRT
<213> human metapneumo virus

<400> 346
Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
1 5 10 15
Ser Glu His Gly Pro Val Phe Ile Thr Ile Glu Val Asp Asp Met Ile
20 25 30
Trp Thr His Lys Asp Leu Lys Glu Ala Leu Ser Asp Gly Ile Val Lys
35 40 45

Ser His Thr Asn Ile Tyr Asn Cys Tyr Leu Glu Asn Ile Glu Ile Ile
 50 55 60
 Tyr Val Lys Ala Tyr Leu Ser
 65 70

<210> 347
 <211> 71
 <212> PRT
 <213> human metapneumo virus

<400> 347
 Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
 1 5 10 15
 Ser Glu His Gly Pro Val Phe Ile Thr Ile Glu Val Asp Glu Met Ile
 20 25 30
 Trp Thr Gln Lys Glu Leu Lys Glu Ala Leu Ser Asp Gly Ile Val Lys
 35 40 45
 Ser His Thr Asn Ile Tyr Asn Cys Tyr Leu Glu Asn Ile Glu Ile Ile
 50 55 60
 Tyr Val Lys Ala Tyr Leu Ser
 65 70

<210> 348
 <211> 71
 <212> PRT
 <213> human metapneumo virus

<400> 348
 Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
 1 5 10 15
 Ser Lys His Gly Pro Lys Phe Ile Thr Ile Glu Ala Asp Asp Met Ile
 20 25 30
 Trp Thr His Lys Glu Leu Lys Glu Thr Leu Ser Asp Gly Ile Val Lys
 35 40 45
 Ser His Thr Asn Ile Tyr Ser Cys Tyr Leu Glu Asn Ile Glu Ile Ile
 50 55 60
 Tyr Val Lys Thr Tyr Leu Ser
 65 70

<210> 349
 <211> 71
 <212> PRT
 <213> human metapneumo virus

<400> 349
 Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
 1 5 10 15
 Ser Lys His Gly Pro Lys Phe Ile Thr Ile Glu Ala Asp Asp Met Ile
 20 25 30
 Trp Thr His Lys Glu Leu Lys Glu Thr Leu Ser Asp Gly Ile Val Lys
 35 40 45
 Ser His Thr Asn Ile Tyr Ser Cys Tyr Leu Glu Asn Ile Glu Ile Ile
 50 55 60
 Tyr Val Lys Ala Tyr Leu Ser
 65 70

<210> 350

<211> 216
 <212> DNA
 <213> human metapneumo virus

<400> 350
 atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag tgagcatggg 60
 ccagttttca ttactataga ggttgatgac atgatatgga ctcacaagga cttaaaagaa 120
 gctttatctg atgggatagt gaagtctcat actaacattt acaattgtta tttagaaaac 180
 atagaaatta tatatgtcaa ggcttactta agttag 216

<210> 351
 <211> 216
 <212> DNA
 <213> human metapneumo virus

<400> 351
 atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag tgagcatggg 60
 cctgttttca ttactataga ggttgatgaa atgatatgga ctcacaaaaga attaaaagaa 120
 gctttgtccg atgggatagt gaagtctcac accaacattt acaattgtta tttagaaaac 180
 atagaaatta tatatgtcaa ggcttactta agttag 216

<210> 352
 <211> 216
 <212> DNA
 <213> human metapneumo virus

<400> 352
 atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag taaacatggg 60
 cccaaattca ttaccataga ggcagatgat atgatatgga ctcacaaaaga attaaaagaa 120
 acactgtctg atgggatagt aaaatcacac accaatattt atagttgtta cttagaaaat 180
 atagaaataa tatatgttaa aacttactta agttag 216

<210> 353
 <211> 216
 <212> DNA
 <213> human metapneumo virus

<400> 353
 atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag taagcatggg 60
 cccaaattca ttaccataga ggcagatgat atgatatgga cacacaaaaga attaaaggag 120
 acactgtctg atgggatagt aaaatcacac accaatattt acagttgtta tttagaaaat 180
 atagaaataa tatatgttaa agcttactta agttag 216

<210> 354
 <211> 727
 <212> DNA
 <213> human metapneumo virus

<400> 354
 atgtctcgca aggctccgtg caaatatgaa gtgcggggca aatgcaatag aggaagtggg 60
 tgcaagttta accacaatta ctggagttgg ccagatagat acttattaat aagatcaaat 120
 tatttattaa atcaactttt aaggaacact gatagagctg atggcttatc aataatatca 180
 ggagcaggca gagaagatag gacacaagat tttgtcctag gttccaccaa tgtgggtcaa 240
 gggttatattg atgataacca aagcataaca aaagctgcag cctgtttacag tctacataat 300
 ataatacaaac aactacaaga agttgaagtt aggcaggcta gagataacaa actatctgac 360
 agcaaactatg tagcacttca caacttagtc ctatcttata tggagatgag caaaactcct 420
 gcatctttta tcaacaatct caagagactg ccgagagaga aactgaaaaa attagcaaag 480
 ctcataattg acttatcagc aggtgctgaa aatgactctt catatgcctt gcaagacagt 540
 gaaagcacta atcaagtgcg gtgagcatgg tccagttttc attactatag aggttgatga 600
 catgatatgg actcacaagg acttaaaaga agctttatct gatgggatag tgaagtctca 660
 tactaacatt tacaattggt atttagaaaa catagaaatt atatatgtca aggccttactt 720

aagttag

727

<210> 355

<211> 727

<212> DNA

<213> human metapneumo virus

<400> 355

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atgtctcgca aggctccatg caaatatgaa gtgcggggca aatgcaacag aggaagtgag 60
tgtaagttta accacaatta ctggagttgg ccagatagat acttattaat aagatcaaac 120
tatctattaa atcagctttt aaggaacact gatagagctg atggcctatc aataatatca 180
ggcgaggca gagaagacag aacgcaagat tttgttctag gttccaccaa tgtggttcaa 240
ggttatattg atgataacca aagcataaca aaagctgcag cctgctacag tctacacaac 300
ataatcaagc aactacaaga agttgaagtt aggcaggcta gagatagcaa actatctgac 360
agcaagcatg tggcactcca taacttaatc ttatcttaca tggagatgag caaaactccc 420
gcatctttta tcaacaatct taaaagactg ccgagagaaa aactgaaaaa attagcaaaag 480
ctgataattg acttatcagc aggcgctgac aatgactctt catatgccct gcaagacagt 540
gaaagcacta atcaagtgcg gtgagcatgg tcctgttttc attactatag aggttgatga 600
aatgatatgg actcaaaaag aattaaaaga agctttgtcc gatgggatag tgaagtctca 660
caccaacatt tacaattggt atttagaaaa catagaaatt atatatgtca aggcttactt 720
aagttag 727
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<210> 356

<211> 727

<212> DNA

<213> human metapneumo virus

<400> 356

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atgtctcgta aggctccatg caaatatgaa gtgcggggca aatgcaacag agggagtgat 60
tgcaaattca atcacaatta ctggagttgg cctgatagat atttattggt aagatcaaat 120
tatctcttaa atcagctttt aagaaacaca gataaggctg atggtttgct aataatatca 180
ggagcaggta gagaagatag aactcaagac tttgttcttg gttctactaa tgtggttcaa 240
gggtacattg atgacaacca aggaataacc aaggctgcag cttgctatag tctacacaac 300
ataatcaagc aactacaaga aacagaagta agacaggcta gagacaacaa gctttctgat 360
agcaaacatg tggcgctcca caacttgata ttatcctata tggagatgag caaaactcct 420
gcatctctaa tcaacaacct aaagaaacta ccaagggaaa aactgaagaa attagcaaga 480
ttaataattg atttatcagc aggaactgac aatgactctt catatgcctt gcaagacagt 540
gaaagcacta atcaagtgcg gtaaacatgg tcccaaattc attaccatag aggcagatga 600
tatgatatgg actcacaag aattaaaaga aacactgtct gatgggatag taaaatcaca 660
caccaatatt tatagttggt acttagaaaa tatagaaata atatatgtta aaacttactt 720
aagttag 727
```

<210> 357

<211> 727

<212> DNA

<213> human metapneumo virus

<400> 357

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atgtctcgca aagctccatg caaatatgaa gtacggggca agtgcaacag gggaagtgag 60
tgcaaattca accacaatta ctggagctgg cctgataggt atttattggt aagatcaaat 120
tatctcttga atcagctttt aagaaacact gataaggctg atggtttgct aataatatca 180
ggagcaggta gagaagatag gactcaagac tttgttcttg gttctactaa tgtggttcaa 240
gggtacattg ataacaatca aggaataaca aaggctgcag cttgctatag tctacataac 300
ataataaaaac agctacaaga aatagaagta agacaggcta gagataataa gctttctgac 360
agcaaacatg tggcacttca caacttgata ttatcctata tggagatgag caaaactcct 420
gcatccctga ttaataacct aaagaaacta ccaagagaaa aactgaagaa attagcgaag 480
ttaataattg atttatcagc aggaactgat aatgactctt catatgcctt gcaagacagt 540
gaaagcacta atcaagtgcg gtaagcatgg tcccaaattc attaccatag aggcagatga 600
tatgatatgg acacacaaag aattaaagga gacactgtct gatgggatag taaaatcaca 660
caccaatatt tacagttggt atttagaaaa tatagaaata atatatgtta aagcttactt 720
aagttag 727
```

<210> 358
 <211> 254
 <212> PRT
 <213> human metapneumo virus

<400> 358
 Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
 1 5 10 15
 Ala Val Gln Val Asp Leu Ile Glu Lys Asp Leu Leu Pro Ala Ser Leu
 20 25 30
 Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
 35 40 45
 Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Thr Leu Tyr Ala Ala Ser
 50 55 60
 Gln Asn Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
 65 70 75 80
 Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
 85 90 95
 Asp Glu Tyr Ser Lys Leu Glu Phe Asp Lys Leu Thr Val Cys Glu Val
 100 105 110
 Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys
 115 120 125
 Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile
 130 135 140
 Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Thr Pro Val Thr Ile
 145 150 155 160
 Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Glu Ser Ala Thr
 165 170 175
 Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala
 180 185 190
 Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn
 195 200 205
 Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val
 210 215 220
 Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Lys Ile Cys Lys
 225 230 235 240
 Thr Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Arg
 245 250

<210> 359
 <211> 254
 <212> PRT
 <213> human metapneumo virus

<400> 359
 Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
 1 5 10 15
 Ala Val Gln Val Asp Leu Val Glu Lys Asp Leu Leu Pro Ala Ser Leu
 20 25 30
 Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
 35 40 45
 Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Thr Leu Tyr Ala Ala Ser
 50 55 60
 Gln Ser Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
 65 70 75 80
 Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
 85 90 95
 Asp Glu Tyr Ser Lys Leu Glu Phe Asp Lys Leu Thr Val Cys Glu Val
 100 105 110

Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys
 115 120 125
 Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile
 130 135 140
 Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Thr Pro Val Thr Ile
 145 150 155 160
 Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Glu Ser Ala Thr
 165 170 175
 Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala
 180 185 190
 Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn
 195 200 205
 Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val
 210 215 220
 Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Lys Ile Cys Lys
 225 230 235 240
 Thr Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Ser
 245 250

<210> 360

<211> 254

<212> PRT

<213> human metapneumo virus

<400> 360

Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
 1 5 10 15
 Ala Val Gln Val Asp Leu Val Glu Lys Asp Leu Leu Pro Ala Ser Leu
 20 25 30
 Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
 35 40 45
 Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Thr Leu Tyr Ala Ala Ser
 50 55 60
 Gln Asn Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
 65 70 75 80
 Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
 85 90 95
 Asp Glu Tyr Ser Lys Leu Asp Phe Asp Lys Leu Thr Val Cys Asp Val
 100 105 110
 Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys
 115 120 125
 Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile
 130 135 140
 Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Ile Pro Val Thr Ile
 145 150 155 160
 Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Glu Ser Ala Thr
 165 170 175
 Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala
 180 185 190
 Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn
 195 200 205
 Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val
 210 215 220
 Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Arg Ile Cys Lys
 225 230 235 240
 Ser Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Arg
 245 250

<210> 361

<211> 254
 <212> PRT
 <213> human metapneumo virus

<400> 361
 Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
 1 5 10 15
 Ala Val Gln Val Asp Leu Val Glu Lys Asp Leu Leu Pro Ala Ser Leu
 20 25 30
 Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
 35 40 45
 Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Thr Leu Tyr Ala Ala Ser
 50 55 60
 Gln Asn Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
 65 70 75 80
 Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
 85 90 95
 Asp Glu Tyr Ser Lys Leu Asp Phe Asp Lys Leu Thr Val Cys Asp Val
 100 105 110
 Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys
 115 120 125
 Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile
 130 135 140
 Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Ile Pro Val Thr Ile
 145 150 155 160
 Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Glu Ser Ala Thr
 165 170 175
 Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala
 180 185 190
 Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn
 195 200 205
 Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val
 210 215 220
 Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Arg Ile Cys Lys
 225 230 235 240
 Ser Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Arg
 245 250

<210> 362
 <211> 765
 <212> DNA
 <213> human metapneumo virus

<400> 362
 atggagtcct acctagtaga cacctatcaa ggcattcctt acacagcagc tgttcaagtt 60
 gatctaataag aaaaggacct gttacctgca agcctaacaa tatgggttccc tttgtttcag 120
 gccaacacac caccagcagt gctgctcgat cagctaaaaa ccctgacaat aaccactctg 180
 tatgctgcat cacaaaatgg tccaatactc aaagtgaatg catcagccca aggtgcagca 240
 atgtctgtac ttcccaaaaa atttgaagtc aatgcgactg tagcactcga tgaatatagc 300
 aaactggaat ttgacaaaact cacagtctgt gaagtaaaaa cagtttactt aacaaccatg 360
 aaaccatacg ggatggtatc aaaattttgtg agctcagcca aatcagtttg caaaaaaaca 420
 catgatctaa tcgcactatg tgatttttatg gatctagaaa agaacacacc tgttacaata 480
 ccagcattca tcaaatcagt ttcaatcaaa gagagtgaag cagctactgt tgaagctgct 540
 ataagcagtg aagcagacca agctcctaaca caggccaaaa ttgcacctta tgcgggatta 600
 attatgatca tgactatgaa caatcccaaa ggcataattca aaaagcttgg agctgggact 660
 caagtcatag tagaactagg agcatatgtc caggctgaaa gcataagcaa aatatgcaag 720
 acttgagacc atcaagggac aagatatgtc ttgaagtcca gataa 765

<210> 363
 <211> 765

<212> DNA
<213> human metapneumo virus

<400> 363
atggagtcct atctggtaga cacttatcaa ggcattccctt acacagcagc tgttcaagtt 60
gatctagtag aaaaggacct gttacctgca agcctaacaa tatggttccc cttgtttcag 120
gccaatacac caccagcagt tctgcttgat cagctaaaga ctctgactat aactactctg 180
tatgctgcat cacaaagtgg tccaatacta aaagtgaatg catcagccca ggggtgcagca 240
atgtctgtac ttcccaaaaa gtttgaagtc aatgcgactg tagcacttga cgaatatagc 300
aaattagaat ttgacaaact tacagtctgt gaagtaaaaa cagtttactt aacaaccatg 360
aaaccatatt ggatgggtatc aaagtttgtg agctcggcca aatcagttgg caaaaaaaca 420
catgatctaa tcgcattatg tgattttatg gatctagaaa agaacacacc agttacaata 480
ccagcattta tcaaatcagt ttctatcaag gagagtgaat cagccactgt tgaagctgca 540
ataagcagtg aagcagacca agctctaaca caagccaaaa ttgcacctta tgcgggactg 600
atcatgatta tgaccatgaa caatcccaaa ggcataattca agaagcttgg agctgggacc 660
caagttatag tagaactagg agcatatgtc caggctgaaa gcataagtaa aatatgcaag 720
acttggagcc atcaaggaac aagatatgtg ctgaagtcca gttaa 765

<210> 364
<211> 765
<212> DNA
<213> human metapneumo virus

<400> 364
atggagtcct atctagtaga cacttatcaa ggcattccat atacagctgc tgttcaagtt 60
gacctggtag aaaaagattt actgccagca agtttgacaa tatggtttcc tttatttcag 120
gccaacacac caccagcagt tctgcttgat cagctaaaaa ccttgacaat aacaactctg 180
tatgctgcat cacagaatgg tccaatactc aaggtaaatg catctgcca aggtgctgcc 240
atgtctgtac ttcccaaaaa attcgaggta aatgcaactg tagcacttga tgaatacagt 300
aaacttgatt ttgacaagct gacggtctgc gatgttaaaa cagtttattt gacaactatg 360
aaaccgtacg ggatgggtgtc aaaatttgtg agttcagcca aatcagttgg caaaaagaca 420
catgatctaa ttgactatg tgacttcatg gacctagaga aaaatatacc tgtgacaata 480
ccagcattca taaagtcagt ttcaatcaaa gagagtgaat cagccactgt tgaagctgca 540
ataagcagcg aagccgacca agccttgaca caagccaaga ttgcgccta tgcaggacta 600
attatgatca tgaccatgaa caatcccaaa ggtatattca agaaactagg ggctggaaca 660
caagtgatag tagagctggg ggcataatgtt caggctgaga gcatcagtag gatctgcaag 720
agctggagtc accaaggaac aagatacgtc ctaaaatcca gataa 765

<210> 365
<211> 765
<212> DNA
<213> human metapneumo virus

<400> 365
atggagtcct atctagtggg cacttatcaa ggcattccct acacagctgc tgttcaagtt 60
gatctggtag aaaaagactt actaccagca agtttgacaa tatggtttcc tctattccaa 120
gccaacacac caccagcggg tttgctcgat cagctaaaaa ccttgactat aacaactctg 180
tatgctgcat cacagaatgg tccaatactc aaagtaaatg catcagctca ggggtgctgct 240
atgtctgtac ttcccaaaaa attcgaagta aatgcaactg tggcacttga tgaatacagc 300
aaacttgact ttgacaagtt aacggtttgc gatgttaaaa cagtttattt gacaaccatg 360
aagccatatt ggatgggtgtc aaaatttgtg agttcagcca aatcagttgg caaaaagaca 420
catgatctaa ttgactgtg tgacttcatg gacctagaga aaaatatacc tgtgacaata 480
ccagcattca taaagtcagt ttcaatcaaa gagagtgaat cagccactgt tgaagctgca 540
ataagcagtg aggcgacca agcattaaca caagccaaaa ttgcacccta tgcaggacta 600
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caagtgatag tagagctagg ggcataatgtt caagccgaga gcatcagcag gatctgcaag 720
agctggagtc accaaggaac aagatatgta ctaaaatcca gataa 765

<210> 366
<211> 394
<212> PRT

<213> human metapneumo virus

<400> 366

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Met Ser Leu Gln Gly Ile His Leu Ser Asp Leu Ser Tyr Lys His Ala
1      5      10      15
Ile Leu Lys Glu Ser Gln Tyr Thr Ile Lys Arg Asp Val Gly Thr Thr
20      25      30
Thr Ala Val Thr Pro Ser Ser Leu Gln Gln Glu Ile Thr Leu Leu Cys
35      40      45
Gly Glu Ile Leu Tyr Ala Lys His Ala Asp Tyr Lys Tyr Ala Ala Glu
50      55      60
Ile Gly Ile Gln Tyr Ile Ser Thr Ala Leu Gly Ser Glu Arg Val Gln
65      70      75      80
Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Arg
85      90      95
Thr Tyr Ser Leu Gly Lys Ile Lys Asn Asn Lys Gly Glu Asp Leu Gln
100     105     110
Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Val Glu Glu Ile Asp
115     120     125
Lys Glu Ala Arg Lys Thr Met Ala Thr Leu Leu Lys Glu Ser Ser Gly
130     135     140
Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile
145     150     155     160
Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile
165     170     175
Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser
180     185     190
Asp Ala Leu Lys Arg Tyr Pro Arg Met Asp Ile Pro Lys Ile Ala Arg
195     200     205
Ser Phe Tyr Asp Leu Phe Glu Gln Lys Val Tyr His Arg Ser Leu Phe
210     215     220
Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala
225     230     235     240
Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln
245     250     255
Thr Met Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met
260     265     270
Leu Gly His Val Ser Val Gln Ala Glu Leu Lys Gln Val Thr Glu Val
275     280     285
Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu
290     295     300
Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn
305     310     315     320
Phe Ala Ser Val Val Leu Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly
325     330     335
Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu
340     345     350
Ser Tyr Ala Lys Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser
355     360     365
Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn
370     375     380
Val Ser Asp Asp Ser Gln Asn Asp Tyr Glu
385     390
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<210> 367

<211> 394

<212> PRT

<213> human metapneumo virus

<400> 367

Met	Ser	Leu	Gln	Gly	Ile	His	Leu	Ser	Asp	Leu	Ser	Tyr	Lys	His	Ala
1				5					10					15	
Ile	Leu	Lys	Glu	Ser	Gln	Tyr	Thr	Ile	Lys	Arg	Asp	Val	Gly	Thr	Thr
			20					25					30		
Thr	Ala	Val	Thr	Pro	Ser	Ser	Leu	Gln	Gln	Glu	Ile	Thr	Leu	Leu	Cys
		35					40					45			
Gly	Glu	Ile	Leu	Tyr	Ala	Lys	His	Ala	Asp	Tyr	Lys	Tyr	Ala	Ala	Glu
	50					55					60				
Ile	Gly	Ile	Gln	Tyr	Ile	Ser	Thr	Ala	Leu	Gly	Ser	Glu	Arg	Val	Gln
65					70					75					80
Gln	Ile	Leu	Arg	Asn	Ser	Gly	Ser	Glu	Val	Gln	Val	Val	Leu	Thr	Arg
			85						90					95	
Thr	Tyr	Ser	Leu	Gly	Lys	Val	Lys	Asn	Asn	Lys	Gly	Glu	Asp	Leu	Gln
			100					105					110		
Met	Leu	Asp	Ile	His	Gly	Val	Glu	Lys	Ser	Trp	Val	Glu	Glu	Ile	Asp
		115					120					125			
Lys	Glu	Ala	Arg	Lys	Thr	Met	Ala	Thr	Leu	Leu	Lys	Glu	Ser	Ser	Gly
	130					135					140				
Asn	Ile	Pro	Gln	Asn	Gln	Arg	Pro	Ser	Ala	Pro	Asp	Thr	Pro	Ile	Ile
145					150					155					160
Leu	Leu	Cys	Val	Gly	Ala	Leu	Ile	Phe	Thr	Lys	Leu	Ala	Ser	Thr	Ile
			165					170						175	
Glu	Val	Gly	Leu	Glu	Thr	Thr	Val	Arg	Arg	Ala	Asn	Arg	Val	Leu	Ser
			180					185					190		
Asp	Ala	Leu	Lys	Arg	Tyr	Pro	Arg	Met	Asp	Ile	Pro	Lys	Ile	Ala	Arg
		195					200					205			
Ser	Phe	Tyr	Asp	Leu	Phe	Glu	Gln	Lys	Val	Tyr	Tyr	Arg	Ser	Leu	Phe
	210					215					220				
Ile	Glu	Tyr	Gly	Lys	Ala	Leu	Gly	Ser	Ser	Ser	Thr	Gly	Ser	Lys	Ala
225					230					235					240
Glu	Ser	Leu	Phe	Val	Asn	Ile	Phe	Met	Gln	Ala	Tyr	Gly	Ala	Gly	Gln
			245						250					255	
Thr	Met	Leu	Arg	Trp	Gly	Val	Ile	Ala	Arg	Ser	Ser	Asn	Asn	Ile	Met
		260						265					270		
Leu	Gly	His	Val	Ser	Val	Gln	Ala	Glu	Leu	Lys	Gln	Val	Thr	Glu	Val
		275					280					285			
Tyr	Asp	Leu	Val	Arg	Glu	Met	Gly	Pro	Glu	Ser	Gly	Leu	Leu	His	Leu
	290					295					300				
Arg	Gln	Ser	Pro	Lys	Ala	Gly	Leu	Leu	Ser	Leu	Ala	Asn	Cys	Pro	Asn
305					310						315				320
Phe	Ala	Ser	Val	Val	Leu	Gly	Asn	Ala	Ser	Gly	Leu	Gly	Ile	Ile	Gly
			325					330						335	
Met	Tyr	Arg	Gly	Arg	Val	Pro	Asn	Thr	Glu	Leu	Phe	Ser	Ala	Ala	Glu
		340						345					350		
Ser	Tyr	Ala	Lys	Ser	Leu	Lys	Glu	Ser	Asn	Lys	Ile	Asn	Phe	Ser	Ser
		355					360					365			
Leu	Gly	Leu	Thr	Asp	Glu	Glu	Lys	Glu	Ala	Ala	Glu	His	Phe	Leu	Asn
	370					375					380				
Val	Ser	Asp	Asp	Ser	Gln	Asn	Asp	Tyr	Glu						
385					390										

<210> 368

<211> 394

<212> PRT

<213> human metapneumo virus

<400> 368

Met	Ser	Leu	Gln	Gly	Ile	His	Leu	Ser	Asp	Leu	Ser	Tyr	Lys	His	Ala
1				5					10					15	
Ile	Leu	Lys	Glu	Ser	Gln	Tyr	Thr	Ile	Lys	Arg	Asp	Val	Gly	Thr	Thr

Gly Glu Ile Leu Tyr Thr Lys His Thr Asp Tyr Lys Tyr Ala Ala Glu
 50 55 60
 Ile Gly Ile Gln Tyr Ile Cys Thr Ala Leu Gly Ser Glu Arg Val Gln
 65 70 75 80
 Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Lys
 85 90 95
 Thr Tyr Ser Leu Gly Lys Gly Lys Asn Ser Lys Gly Glu Glu Leu Gln
 100 105 110
 Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Val Glu Glu Ile Asp
 115 120 125
 Lys Glu Ala Arg Lys Thr Met Val Thr Leu Leu Lys Glu Ser Ser Gly
 130 135 140
 Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile
 145 150 155 160
 Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile
 165 170 175
 Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser
 180 185 190
 Asp Ala Leu Lys Arg Tyr Pro Arg Val Asp Ile Pro Lys Ile Ala Arg
 195 200 205
 Ser Phe Tyr Glu Leu Phe Glu Gln Lys Val Tyr Tyr Arg Ser Leu Phe
 210 215 220
 Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala
 225 230 235 240
 Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln
 245 250 255
 Thr Met Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met
 260 265 270
 Leu Gly His Val Ser Val Gln Ala Glu Leu Lys Gln Val Thr Glu Val
 275 280 285
 Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu
 290 295 300
 Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn
 305 310 315 320
 Phe Ala Ser Val Val Leu Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly
 325 330 335
 Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu
 340 345 350
 Ser Tyr Ala Arg Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser
 355 360 365
 Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn
 370 375 380
 Met Ser Asp Asp Asn Gln Asp Asp Tyr Glu
 385 390

<210> 370

<211> 1185

<212> DNA

<213> human metapneumo virus

<400> 370

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 caacaagaaa taacactggt gtgtggagaa attctgtatg ctaaactatgc tgactacaaa 180
 tatgtctgcag aaataggaat acaatatatt agcacagctt taggatcaga gagagtgcag 240
 cagattctga ggaactcagg cagtgaagtc caagtgggtc taaccagaac gtactctctg 300
 gggaaaatta aaaacaataa aggagaagat ttacagatgt tagacatata cggggtagag 360
 aagagctggg tagaagagat agacaaaaga gcaaggaaaa caatggcaac cttgcttaag 420
 gaatcatcag gtaatatccc acaaaatcag aggcctcag caccagacac acccataatc 480
 ttattatgtg taggtgcctt aatattcact aaactagcat caacccataga agtgggacta 540

gagaccacag	tcagaagggc	taaccgtgta	ctaagtgatg	cactcaagag	ataccctaga	600
atggacatac	caaagattgc	cagatccttc	tatgacttat	ttgaacaaaa	agtgtatcac	660
agaagtttgt	tcattgagta	tggcaaagca	ttaggctcat	catctacagg	cagcaaagca	720
gaaagtctat	ttgttaatat	attcatgcaa	gcttatgggg	ccggtcaaac	aatgctaagg	780
tgggggggtc	ttgccaggtc	atccaacaat	ataatgttag	gacatgtatc	cgtccaagct	840
gagttaaaac	aggtcacaga	agtctatgac	ttggtgcgag	aaatgggccc	tgaatctgga	900
cttctacatt	taaggcaaag	cccaaaagct	ggactgttat	cactagccaa	ctgtcccaac	960
tttgcaagtg	ttgttctcgg	aaatgcctca	ggcttaggca	taatcggtat	gtatcgaggg	1020
agagtaccaa	acacagaatt	attttcagca	gctgaaagtt	atgccaaaag	tttgaaagaa	1080
agcaataaaa	taaattttctc	ttcattagga	cttacagatg	aagagaaaga	ggctgcagaa	1140
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<210> 371

<211> 1185

<212> DNA

<213> human metapneumo virus

<400> 371

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caacaagaaa	taacactatt	gtgtggagaa	attctatatg	ctaagcatgc	tgattacaaa	180
tatgctgcag	aaataggaat	acaatatatt	agcacagctc	taggatcaga	gagagtacag	240
cagattctaa	gaaactcagg	tagtgaagtc	caagtgggtt	taaccagaac	gtactccttg	300
gggaaagtta	aaaacaacaa	aggagaagat	ttacagatgt	tagacataca	cggagtagag	360
aaaagctggg	tggaagagat	agacaaaaga	gcaagaaaaa	caatggcaac	tttgcttaaa	420
gaatcatcag	gcaatattcc	acaaaatcag	aggccttcag	caccagacac	acccataatc	480
ttattatgtg	tagtgccctt	aatattttacc	aaactagcat	caactataga	agtgggatta	540
gagaccacag	tcagaagagc	taaccgtgta	ctaagtgatg	cactcaaaaag	ataccctagg	600
atggacatac	caaaaatcgc	tagatctttc	tatgacttat	ttgaacaaaa	agtgtattac	660
agaagtttgt	tcattgagta	tggcaaagca	ttaggctcat	cctctacagg	cagcaaagca	720
gaaagtttat	tcgttaatat	attcatgcaa	gcttacgggtg	ctgggtcaaac	aatgctgagg	780
tggggagtca	ttgccaggtc	atctaacaat	ataatgttag	gacatgtatc	tgttcaagct	840
gagttaaaac	aagtcacaga	agtctatgac	ctggtgcgag	aaatgggccc	tgaatctggg	900
ctcctacatt	taaggcaaag	cccaaaagct	ggactgttat	cactagccaa	ttgtcccaac	960
tttgctagtg	ttgttctcgg	caatgcctca	ggcttaggca	taatagggtat	gtatcgcgagg	1020
agagtgccaa	acacagaact	attttcagca	gcgaaaagct	atgccaaagag	tttgaaagaa	1080
agcaataaaa	ttactttttc	ttcattagga	ctcacagatg	aagaaaaaga	ggctgcagaa	1140
cacttcctaa	atgtgagtga	cgacagtcaa	aatgattatg	agtaa		1185

<210> 372

<211> 1185

<212> DNA

<213> human metapneumo virus

<400> 372

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caacaagaaa	taacactttt	gtgtggggaa	atacttttaca	ctaaacacac	tgattacaaa	180
tatgctgctg	agataggaat	acaatatatt	tgcacagctc	taggatcaga	aagagtacaa	240
cagatttttga	gaaactcagg	tagtgaagtt	caggtgggttc	taaccaaaaac	atactcctta	300
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aagagtgtga	tagaagaaat	agacaaaaga	gcaagaaaaga	caatgggtaac	tttgcttaag	420
gaatcatcag	gtaacatccc	acaaaaccag	agaccttcag	caccagacac	accaataatt	480
ttattatgtg	tagtgccctt	aatatttact	aaactagcat	caacaataga	agttggatta	540
gagactacag	ttagaagagc	taatagagtg	ctaagtgatg	cactcaaaaag	atacccaagg	600
atagatatata	caaagattgc	tagatctttt	tatgaactat	ttgaacaaaa	agtgtactac	660
agaagtttat	tcattgagta	cggaaaagct	ttaggctcat	cttcaacagg	aagcaaagca	720
gaaagtttgt	ttgtaaatat	atttatgcaa	gcttatggag	ctggccaaac	actgctaagg	780
tgggggtgtc	ttgccagatc	atccaacaac	ataatgctag	ggcatgtatc	tggtgcaatct	840
gaattgaagc	aagttacaga	ggtttatgac	ttggtgagag	aaatgggtcc	tgaatctggg	900
ctttttacatc	taagacaaag	tccaaaggca	gggctgttat	cattggccaa	ttgcccctta	960

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tttgctagtg ttgttcttgg caatgcttca ggtctaggca taatcggaat gtacagaggg 1020
agagtaccaa acacagagct attttctgca gcagaaagtt atgccagaag cttaaaaagaa 1080
agcaataaaa tcaacttctc ttcgttaggg cttacagatg aagaaaaaga agctgcagaa 1140
cacttcttaa acatgagtgg tgacaatcaa aatgattatg agtaa 1185

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<210> 373
<211> 1185
<212> DNA
<213> human metapneumo virus

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<400> 373
atgtctcttc aagggattca cctaagtgat ctgtcatata aacatgctat attaaaagag 60
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cagcaagaga taacactttt gtgtggagag attctttaca ctaaacatac tgattacaaa 180
tatgctgcag agatagggat acaatatatt tgcacagctc taggatcaga aagagtacaa 240
cagatttttaa gaaattcagg tagtgagggt cagggtggtc taaccaagac atactcttta 300
gggaaaggta aaaatagtaa aggggaagag ttgcaaagt tagatataca tggagtggaa 360
aagagttggg tagaagaaat agacaaagag gcaagaaaaa caatggtgac tttgctaaaag 420
gaatcatcag gcaacatccc acaaaaccag aggccttcag caccagacac accaataatt 480
ttattgtgtg taggtgcttt aatattcact aaactagcat caacaataga agttggacta 540
gagactacag ttagaagggc taacagagtg ttaagtgat cgctcaaaaag ataccctagg 600
gtagatatac caaagattgc tagatctttt tatgaactat ttgagcagaa agtgtattac 660
aggagtctat tcattgagta tgggaaagct ttaggctcat cttcaacagg aagcaaagca 720
gaaagtttgt ttgtaaatat atttatgcaa gcttatggag ccggtcagac aatgctaagg 780
tgggggtgtc ttgccagatc atctaacaac ataatgctag ggcatgtatc tgtgcaagct 840
gaattgaaac aagttacaga ggtttatgat ttggtaagag aaatgggtcc tgaatctggg 900
cttttacatc taagacaaag tccaaaggca ggactgttat cgttgggctaa ttgccccaat 960
tttgctagtg ttgttcttgg taatgcttca ggtctaggta taatcggaat gtacagggga 1020
agagtgccaa acacagagct attttctgca gcagaaagtt atgccagaag cttaaaaagaa 1080
agcaacaaaa tcaacttctc ctcattaggg ctcacagacg aagaaaaaga agctgcagaa 1140
cacttcttaa acatgagtga tgacaatcaa gatgattatg agtaa 1185

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<210> 374
<211> 294
<212> PRT
<213> human metapneumo virus

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<400> 374
Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala
1          5          10          15
Ala Lys Leu Ala Glu Ala Phe Gln Lys Ser Leu Arg Lys Pro Gly His
20          25          30
Lys Arg Ser Gln Ser Ile Ile Gly Glu Lys Val Asn Thr Val Ser Glu
35          40          45
Thr Leu Glu Leu Pro Thr Ile Ser Arg Pro Ala Lys Pro Thr Ile Pro
50          55          60
Ser Glu Pro Lys Leu Ala Trp Thr Asp Lys Gly Glu Ala Thr Lys Thr
65          70          75          80
Glu Ile Lys Gln Ala Ile Lys Val Met Asp Pro Ile Glu Glu Glu Glu
85          90          95
Ser Thr Glu Lys Lys Val Leu Pro Ser Ser Asp Gly Lys Thr Pro Ala
100          105          110
Glu Lys Lys Leu Lys Pro Ser Thr Asn Thr Lys Lys Lys Val Ser Phe
115          120          125
Thr Pro Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu
130          135          140
Asp Leu Leu Ser Asp Asn Glu Glu Asp Ala Glu Ser Ser Ile Leu
145          150          155          160
Thr Phe Glu Glu Arg Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu
165          170          175
Glu Ser Ile Glu Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr

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                180                185                190
Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg
                195                200                205
Asp Ala Met Ile Gly Val Arg Glu Glu Leu Ile Ala Asp Ile Ile Lys
                210                215                220
Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Glu Met Ser Gln
225                230                235                240
Arg Ser Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys
                245                250                255
Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu
                260                265                270
Glu Glu Glu Glu Pro Lys Asp Thr Gln Asp Asn Ser Gln Glu Asp Asp
                275                280                285
Ile Tyr Gln Leu Ile Met
                290

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<210> 375

<211> 294

<212> PRT

<213> human metapneumo virus

<400> 375

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Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala
 1                5                10                15
Ala Lys Leu Ala Glu Ala Phe Gln Lys Ser Leu Arg Lys Pro Asn His
                20                25                30
Lys Arg Ser Gln Ser Ile Ile Gly Glu Lys Val Asn Thr Val Ser Glu
35                40                45
Thr Leu Glu Leu Pro Thr Ile Ser Arg Pro Thr Lys Pro Thr Ile Leu
50                55                60
Ser Glu Pro Lys Leu Ala Trp Thr Asp Lys Gly Gly Ala Ile Lys Thr
65                70                75                80
Glu Ala Lys Gln Thr Ile Lys Val Met Asp Pro Ile Glu Glu Glu Glu
                85                90                95
Phe Thr Glu Lys Arg Val Leu Pro Ser Ser Asp Gly Lys Thr Pro Ala
100                105                110
Glu Lys Lys Leu Lys Pro Ser Thr Asn Thr Lys Lys Lys Val Ser Phe
115                120                125
Thr Pro Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu
130                135                140
Asp Leu Leu Ser Asp Asn Glu Glu Glu Asp Ala Glu Ser Ser Ile Leu
145                150                155                160
Thr Phe Glu Glu Arg Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu
165                170                175
Glu Ser Ile Glu Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr
180                185                190
Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg
195                200                205
Asp Ala Met Ile Gly Ile Arg Glu Glu Leu Ile Ala Asp Ile Ile Lys
210                215                220
Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Glu Met Asn Gln
225                230                235                240
Arg Thr Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys
245                250                255
Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu
260                265                270
Glu Glu Glu Glu Pro Lys Asp Thr Gln Glu Asn Asn Gln Glu Asp Asp
275                280                285
Ile Tyr Gln Leu Ile Met
290

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<210> 376
 <211> 294
 <212> PRT
 <213> human metapneumo virus

<400> 376
 Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala
 1 5 10 15
 Ala Lys Ile Ala Glu Ala Phe Gln Lys Ser Leu Lys Lys Ser Gly His
 20 25 30
 Lys Arg Thr Gln Ser Ile Val Gly Glu Lys Val Asn Thr Ile Ser Glu
 35 40 45
 Thr Leu Glu Leu Pro Thr Ile Ser Lys Pro Ala Arg Ser Ser Thr Leu
 50 55 60
 Leu Glu Pro Lys Leu Ala Trp Ala Asp Asn Ser Gly Ile Thr Lys Ile
 65 70 75 80
 Thr Glu Lys Pro Ala Thr Lys Thr Thr Asp Pro Val Glu Glu Glu Glu
 85 90 95
 Phe Asn Glu Lys Lys Val Leu Pro Ser Ser Asp Gly Lys Thr Pro Ala
 100 105 110
 Glu Lys Lys Ser Lys Phe Ser Thr Ser Val Lys Lys Lys Val Ser Phe
 115 120 125
 Thr Ser Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu
 130 135 140
 Asp Leu Leu Ser Asp Asn Glu Glu Glu Asp Ala Glu Ser Ser Ile Leu
 145 150 155 160
 Thr Phe Glu Glu Lys Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu
 165 170 175
 Glu Ser Ile Glu Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr
 180 185 190
 Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg
 195 200 205
 Asp Ala Met Ile Gly Ile Arg Glu Glu Leu Ile Ala Glu Ile Ile Lys
 210 215 220
 Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Met Asn Gln
 225 230 235 240
 Arg Ser Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys
 245 250 255
 Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu
 260 265 270
 Glu Glu Glu Glu Pro Lys Glu Thr Gln Asp Asn Asn Gln Gly Glu Asp
 275 280 285
 Ile Tyr Gln Leu Ile Met
 290

<210> 377
 <211> 294
 <212> PRT
 <213> human metapneumo virus

<400> 377
 Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala
 1 5 10 15
 Ala Lys Ile Ala Glu Ala Phe Gln Lys Ser Leu Lys Arg Ser Gly His
 20 25 30
 Lys Arg Thr Gln Ser Ile Val Gly Glu Lys Val Asn Thr Ile Ser Glu
 35 40 45
 Thr Leu Glu Leu Pro Thr Ile Ser Lys Pro Ala Arg Ser Ser Thr Leu

50		55		60
Leu Glu Pro Lys Leu Ala Trp Ala Asp Ser Ser Gly Ala Thr Lys Thr				
65		70		75
Thr Glu Lys Gln Thr Thr Lys Thr Thr Asp Pro Val Glu Glu Glu Glu				
	85		90	
Leu Asn Glu Lys Lys Val Ser Pro Ser Ser Asp Gly Lys Thr Pro Ala				
	100		105	
Glu Lys Lys Ser Lys Ser Pro Thr Asn Val Lys Lys Lys Val Ser Phe				
	115		120	
Thr Ser Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu				
	130		135	
Asp Leu Leu Ser Asp Asn Glu Glu Glu Asp Ala Glu Ser Ser Ile Leu				
	145		150	
Thr Phe Glu Glu Arg Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu				
	165		170	
Glu Ser Ile Glu Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr				
	180		185	
Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg				
	195		200	
Asp Ala Met Ile Gly Ile Arg Glu Glu Leu Ile Ala Glu Ile Ile Lys				
	210		215	
Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Glu Met Asn Gln				
	225		230	
Arg Ser Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys				
	245		250	
Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu				
	260		265	
Glu Glu Glu Glu Pro Lys Glu Thr Gln Asp Asn Asn Gln Gly Glu Asp				
	275		280	
Ile Tyr Gln Leu Ile Met			285	
290				

<210> 378
 <211> 885
 <212> DNA
 <213> human metapneumo virus

<400> 378
 atgtcattcc ctgaaggaaa agatattctt ttcattgggta atgaagcagc aaaatttagca 60
 gaagctttcc agaaatcatt aagaaaacca ggtcataaaa gatctcaatc tattatagga 120
 gaaaaagtga atactgtatc agaaacattg gaattaccta ctatcagtag acctgcaaaa 180
 ccaaccatac cgtcagaacc aaagtttagca tggacagata aaggtggggc aacaaaaact 240
 gaaataaagc aagcaatcaa agtcatggat cccattgaag aagaagagtc taccgagaag 300
 aaggtgctac cctccagtga tgggaaaacc cctgcagaaa agaaactgaa accatcaact 360
 aacacaaaaa agaagggttc atttacacca aatgaaccag ggaaatatac aaagttggaa 420
 aaagatgctc tagatttgct ctcagataat gaagaagaag atgcagaatc ttcaatctta 480
 acctttgaag aaagagatac ttcattcatta agcattgagg ccagattgga atcaatagag 540
 gagaaattaa gcatgatatt agggctatta agaacactca acattgctac agcaggaccc 600
 acagcagcaa gagatgggat cagagatgca atgattggcg taagagagga attaatagca 660
 gacataataa aggaagctaa agggaaagca gcagaaatga tgggaagagga aatgagtcaa 720
 cgatcaaaaa taggaaatgg tagtgtaaaa ttaacagaaa aagcaaaaga gctcaacaaa 780
 attgttgaag atgaaagcac aagtggagaa tccgaagaag aagaagaacc aaaagacaca 840
 caagacaata gtcaagaaga tgacatttac cagttaatta tgtag 885

<210> 379
 <211> 885
 <212> DNA
 <213> human metapneumo virus

<400> 379

atgtcattcc	ctgaaggaaa	agatattctt	ttcatgggta	atgaagcagc	aaaattggca	60
gaagcttttc	aaaaatcatt	aagaaaacct	aatcataaaa	gatctcaatc	tattatagga	120
gaaaaagtga	acactgtatc	tgaaacattg	gaattaccta	ctatcagtag	acctaccaa	180
ccgaccatat	tgtagagcc	gaagtttagc	tggaacagaca	aaggtggggc	aatcaaaact	240
gaagcaaaagc	aaacaatcaa	agttatggat	cctattgaag	aagaagagtt	tactgagaaa	300
aggggtgctgc	cctccagtga	tgggaaaact	cctgcagaaa	agaagttgaa	accatcaacc	360
aacactaaaa	agaaggtctc	atttacacca	aatgaaccag	gaaaatacac	aaagttggag	420
aaagatgctc	tagacttgct	ttcagacaat	gaagaagaag	atgcagaatc	ctcaatctta	480
accttcgaag	aaagagatac	ttcatcatta	agcattgaag	ccagactaga	atcgattgag	540
gagaaaattaa	gcatgatatt	agggctatta	agaacactca	acattgctac	agcaggaccc	600
acagcagcaa	gagatgggat	cagagatgca	atgattggca	taagggagga	actaatagca	660
cagataataa	aagaagccaa	gggaaaagca	gcagaaatga	tggaagaaga	aatgaaccag	720
cggacaaaaa	taggaaacgg	tagtgtaaaa	ttaactgaaa	aggcaaagga	gctcaacaaa	780
attgtttgaag	acgaaagcac	aagtggtgaa	tccgaagaag	aagaagaacc	aaaagacaca	840
caggaaaata	atcaagaaga	tgacatttac	cagttaatta	tgtag		885

<210> 380

<211> 885

<212> DNA

<213> human metapneumo virus

<400> 380

atgtcattcc	ctgaaggaaa	ggatattctg	ttcatgggta	atgaagcagc	aaaaatagcc	60
gaagcttttc	agaaatcact	gaaaaaatca	ggtcacaaga	gaactcaatc	tattgtaggg	120
gaaaaagtta	acactatatc	agaaactcta	gaactaccta	ccatcagcaa	acctgcacga	180
tcatctacac	tgctggaacc	aaaattggca	tgggcagaca	acagcggaat	cacaaaaatc	240
acagaaaaac	cagcaaccaa	aacaacagat	cctggtgaag	aagaggaatt	caatgaaaag	300
aaagtgttac	cttccagtga	tgggaagact	cctgcagaga	aaaaatcaaa	gttttcaacc	360
agtgtaaaaa	agaaagtttc	ctttacatca	aatgaaccag	ggaaatacac	caaactagag	420
aaagatgccc	tagatttgct	ctcagacaat	gaggaagaag	acgcagaatc	ctcaatccta	480
acttttgagg	agaaagatac	atcatcacta	agcattgaag	ctagactaga	atctatagaa	540
gagaagttga	gcatgatatt	aggactgctt	cgtacactta	acattgcaac	agcaggacca	600
acagctgcac	gagatggaat	tagggatgca	atgattggta	taagagaaga	gctaatagca	660
gagataatta	aggaagccaa	gggaaaagca	gctgaaatga	tggaagaaga	gatgaatcaa	720
agatcaaaaa	taggaaatgg	cagtgtaaaa	ctaaccgaga	aggcaaaaga	gctcaacaaa	780
attgtttgaag	acgagagcac	aagcggtgaa	tcagaagaag	aagaagaacc	aaaagaaact	840
caggataaca	atcaaggaga	agatatttat	cagttaatca	tgtag		885

<210> 381

<211> 885

<212> DNA

<213> human metapneumo virus

<400> 381

atgtcattcc	ctgaaggaaa	agatatcctg	ttcatgggta	atgaagcagc	aaaaatagca	60
gaagcttttc	agaaatcact	aaaaagatca	ggtcacaaaa	gaaccagtc	tattgtaggg	120
gaaaaagtta	acactatatc	agaaactcta	gagctaccta	ccatcagcaa	acctgcacga	180
tcatctacac	tgctagagcc	aaaattggca	tgggcagaca	gcagcggagc	cacaaaaacc	240
acagaaaaac	aaacaaccaa	aacaacagat	cctggtgaag	aagaggaact	caatgaaaag	300
aaggtatcac	cttccagtga	tgggaagact	cctgcagaga	aaaaatcaaa	atctccaacc	360
aatgtaaaaa	agaaagtttc	cttcacatca	aatgaaccag	ggaaatatac	taaactagaa	420
aaagatgccc	tagatttgct	ctcagacaat	gaggaagaag	acgcagagtc	ctcaatccta	480
acctttggaag	agagagacac	atcatcacta	agcattgagg	ctagactaga	atcaatagaa	540
gagaagctaa	gcatgatatt	aggactgctt	cgtacactta	acattgcaac	agcaggacca	600
acggctgcaa	gggatggaat	cagagatgca	atgattggta	taagagaaga	actaatagca	660
gaaataataa	aagaagcaaa	gggaaaagca	gccgaaatga	tggaagagga	aatgaatcaa	720
aggtcaaaaa	taggtaaatgg	cagtgtaaaa	ctaaccgaga	aggcaaaaga	acttaataaa	780
attgtttgaag	acgagagcac	aagtggtgaa	tcagaagaag	aagaagaacc	aaaagaaact	840
caggataaca	atcaaggaga	agatatctac	cagttaatca	tgtag		885

<210> 382

<211> 183
 <212> PRT
 <213> human metapneumo virus

<400> 382
 Met Ile Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Lys Thr Cys
 1 5 10 15
 Thr His Leu Lys Lys Ile Ile Lys Asp His Ser Gly Lys Val Leu Ile
 20 25 30
 Val Leu Lys Leu Ile Leu Ala Leu Thr Phe Leu Thr Val Thr Ile
 35 40 45
 Thr Ile Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ile Cys Gln Ser
 50 55 60
 Lys Thr Glu Ser Asp Lys Lys Asp Ser Ser Ser Asn Thr Thr Ser Val
 65 70 75 80
 Thr Thr Lys Thr Thr Leu Asn His Asp Ile Thr Gln Tyr Phe Lys Ser
 85 90 95
 Leu Ile Gln Arg Tyr Thr Asn Ser Ala Ile Asn Ser Asp Thr Cys Trp
 100 105 110
 Lys Ile Asn Arg Asn Gln Cys Thr Asn Ile Thr Thr Tyr Lys Phe Leu
 115 120 125
 Cys Phe Lys Ser Glu Asp Thr Lys Thr Asn Asn Cys Asp Lys Leu Thr
 130 135 140
 Asp Leu Cys Arg Asn Lys Pro Lys Pro Ala Val Gly Val Tyr His Ile
 145 150 155 160
 Val Glu Cys His Cys Ile Tyr Thr Val Lys Trp Lys Cys Tyr His Tyr
 165 170 175
 Pro Thr Asp Glu Thr Gln Ser
 180

<210> 383
 <211> 179
 <212> PRT
 <213> human metapneumo virus

<400> 383
 Met Ile Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Lys Thr Cys
 1 5 10 15
 Thr His Leu Lys Lys Ile Ile Lys Asp His Ser Gly Lys Val Leu Ile
 20 25 30
 Ala Leu Lys Leu Ile Leu Ala Leu Thr Phe Phe Thr Ile Thr Ile
 35 40 45
 Thr Ile Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ile Cys Gln Ser
 50 55 60
 Lys Thr Glu Ser Asp Lys Glu Asp Ser Pro Ser Asn Thr Thr Ser Val
 65 70 75 80
 Thr Thr Lys Thr Thr Leu Asp His Asp Ile Thr Gln Tyr Phe Lys Arg
 85 90 95
 Leu Ile Gln Arg Tyr Thr Asp Ser Val Ile Asn Lys Asp Thr Cys Trp
 100 105 110
 Lys Ile Ser Arg Asn Gln Cys Thr Asn Ile Thr Thr Tyr Lys Phe Leu
 115 120 125
 Cys Phe Lys Pro Glu Asp Ser Lys Ile Asn Ser Cys Asp Arg Leu Thr
 130 135 140
 Asp Leu Cys Arg Asn Lys Ser Lys Ser Ala Ala Glu Ala Tyr His Thr
 145 150 155 160
 Val Glu Cys His Cys Ile Tyr Thr Ile Glu Trp Lys Cys Tyr His His
 165 170 175
 Pro Ile Asp

<210> 384
 <211> 177
 <212> PRT
 <213> human metapneumo virus

<400> 384
 Met Lys Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Glu Thr Cys
 1 5 10 15
 Asn Gln Leu Lys Lys Ile Ile Lys Lys His Ser Gly Lys Val Leu Ile
 20 25 30
 Ala Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Phe Thr Ala Thr Ile
 35 40 45
 Thr Val Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ala Cys Gln Pro
 50 55 60
 Lys Asn Glu Ser Asp Lys Lys Val Thr Lys Pro Asn Thr Thr Ser Thr
 65 70 75 80
 Thr Ile Arg Pro Thr Pro Asp Pro Thr Val Val His His Leu Lys Arg
 85 90 95
 Leu Ile Gln Arg His Thr Asn Ser Val Thr Lys Asp Ser Asp Thr Cys
 100 105 110
 Trp Arg Ile His Lys Asn Gln Arg Thr Asn Ile Lys Ile Tyr Lys Phe
 115 120 125
 Leu Cys Ser Gly Phe Thr Asn Ser Lys Gly Thr Asp Cys Glu Glu Pro
 130 135 140
 Thr Ala Leu Cys Asp Lys Lys Leu Lys Thr Ile Val Glu Lys His Arg
 145 150 155 160
 Lys Ala Glu Cys His Cys Leu His Thr Thr Glu Trp Gly Cys Leu His
 165 170 175
 Pro

<210> 385
 <211> 177
 <212> PRT
 <213> human metapneumo virus

<400> 385
 Met Lys Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Glu Thr Cys
 1 5 10 15
 Asn Gln Leu Lys Lys Ile Ile Lys Lys His Ser Gly Lys Leu Leu Ile
 20 25 30
 Ala Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Phe Thr Val Thr Ile
 35 40 45
 Thr Val Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ala Cys Gln Leu
 50 55 60
 Lys Asn Glu Ser Asp Lys Lys Asp Thr Lys Leu Asn Thr Thr Ser Thr
 65 70 75 80
 Thr Ile Arg Pro Ile Pro Asp Leu Asn Ala Val Gln Tyr Leu Lys Arg
 85 90 95
 Leu Ile Gln Lys His Thr Asn Phe Val Ile Lys Asp Arg Asp Thr Cys
 100 105 110
 Trp Arg Ile His Thr Asn Gln Cys Thr Asn Ile Lys Ile Tyr Lys Phe
 115 120 125
 Leu Cys Phe Gly Phe Met Asn Ser Thr Asn Thr Asp Cys Glu Glu Leu
 130 135 140
 Thr Val Leu Cys Asp Lys Lys Ser Lys Thr Met Thr Glu Lys His Arg
 145 150 155 160
 Lys Ala Glu Cys His Cys Leu His Thr Thr Glu Trp Trp Cys Tyr Tyr

Leu

165 170 175

<210> 386
 <211> 552
 <212> DNA
 <213> human metapneumo virus

<400> 386
 atgataacat tagatgtcat taaaagtgat gggctcttcaa aaacatgtac tcacctcaaa 60
 aaaataatta aagaccactc tggtaaagtg cttattgtac ttaagttaat attagcttta 120
 ctaacatttc tcacagtaac aatcaccatc aattatataa aagtggaaaa caatctgcaa 180
 atatgccagt caaaaactga atcagacaaa aaggactcat catcaaatac cacatcagtc 240
 acaaccaaga ctactctaaa tcatgatatc acacagtatt ttaaaagttt gattcaaagg 300
 tatacaaact ctgcaataaa cagtgcacaca tgctggaaaa taaacagaaa tcaatgcaca 360
 aatataacaa catacaaatt tttatgtttt aaatctgaag acacaaaaaac caacaattgt 420
 gataaactga cagatttatg cagaaacaaa ccaaaaccag cagttggagt gtatcacata 480
 gtagaatgcc attgtatata cacagttaaa tggaagtgc atcattaccc aaccgatgaa 540
 acccaatcct aa 552

<210> 387
 <211> 540
 <212> DNA
 <213> human metapneumo virus

<400> 387
 atgataacat tagatgtcat taaaagtgat gggctcttcaa aaacatgtac tcacctcaaa 60
 aaaataatca aagaccattc tggtaaagtg cttattgcac ttaagttaat attagcttta 120
 ctaacatttt tcacaataac aatcactata aattacataa aagtagaaaa caatctacaa 180
 atatgccagt caaaaactga atcagacaaa gaagactcac catcaaatac cacatccgtc 240
 acaaccaaga ctactctaga ccatgatata acacagtatt ttaaaagatt aattcaaagg 300
 tatacagatt ctgtgataaa caaggacaca tgctggaaaa taagcagaaa tcaatgcaca 360
 aatataacaa catataaatt tttatgcttt aaacctgagg actcaaaaaat caacagttgt 420
 gatagactga cagatctatg cagaaacaaa tcaaaatcag cagctgaagc atatcatata 480
 gtagaatgcc attgcatata cacaattgag tggaagtgc atcaccaccc aatagattaa 540

<210> 388
 <211> 534
 <212> DNA
 <213> human metapneumo virus

<400> 388
 atgaaaacat tagatgtcat aaaaagtgat ggatcctcag aaacgtgtaa tcaactcaaa 60
 aaaataataa aaaaacactc aggtaaagtg cttattgcac taaaactgat attggcctta 120
 ctgacatttt tcacagcaac aatcactgtc aactatataa aagtagaaaa caatttgcag 180
 gcatgtcaac caaaaaatga atcagacaaa aagggtcaca agccaaatac cacatcaaca 240
 acaatcagac ccacaccga tccaactgta gtacatcatt tgaaaaggct gattcagaga 300
 cacaccaact ctgtcacaaa agacagcgat acttggttga gaatacacaa gaatcaacgt 360
 acaaatataa aaatatacaa gttcttatgc tctgggttca caaattcaaa aggtacagat 420
 tgtgaggaac caacagccct atgcgacaaa aagttaaaaa ccatagtaga aaaacataga 480
 aaagcagaat gtcactgtct acatacaacc gagtgggggt gccttcatcc cttaa 534

<210> 389
 <211> 534
 <212> DNA
 <213> human metapneumo virus

<400> 389

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atgaaaacat tagatgtcat aaaaagtgat ggatcctcag aaacatgtaa tcaactcaaa 60
aaaataataa aaaaacactc aggtaaattg cttattgcat taaaactgat attggcctta 120
ttgacgtttt tcacagtaac aattactgtt aactatataa aagtagaaaa caatttgcag 180
gcatgtcaat taataaatga atcagacaaa aaggacacaa agctaaatac cacatcaaca 240
acaatcagac ccattcctga tctaaatgca gtacagtact tgaaaaggct gattcagaaa 300
cacaccaact ttgtcataaa agacagagat acctgttgga gaatacacac gaatcaatgc 360
acaaatataa aaatatataa gttcttatgt ttcgggttta tgaattcaac aaatacagac 420
tgtgaagaac taacagtttt atgtgataaa aagtcaaaaa ccatgacaga aaaacatagg 480
aaagcagagt gtcactgtct acatacaacc gagtggtggt gttattatct ttaa 534

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<210> 390

<211> 298

<212> PRT

<213> Human respiratory syncytial virus

<220>

<223> attachment glycoprotein of Human respiratory syncytial virus

<400> 390

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Met Ser Lys Thr Lys Asp Gln Arg Thr Ala Lys Thr Leu Glu Arg Thr
 1          5          10          15
Trp Asp Thr Leu Asn His Leu Leu Phe Ile Ser Ser Cys Leu Tyr Lys
          20          25          30
Leu Asn Leu Lys Ser Ile Ala Gln Ile Thr Leu Ser Ile Leu Ala Met
          35          40          45
Ile Ile Ser Thr Ser Leu Ile Ile Ala Ala Ile Ile Phe Ile Ala Ser
          50          55          60
Ala Asn His Lys Val Thr Leu Thr Thr Ala Ile Ile Gln Asp Ala Thr
65          70          75          80
Asn Gln Ile Lys Asn Thr Thr Pro Thr Tyr Leu Thr Gln Asn Pro Gln
          85          90          95
Leu Gly Ile Ser Phe Ser Asn Leu Ser Glu Thr Thr Ser Gln Pro Ile
          100          105          110
Thr Ile Leu Ala Ser Thr Thr Pro Ser Ala Glu Ser Thr Pro Gln Ser
          115          120          125
Thr Thr Val Lys Thr Lys Asn Thr Thr Thr Thr Gln Ile Gln Pro Ser
          130          135          140
Lys Ser Thr Thr Lys Gln Arg Gln Asn Lys Pro Gln Asn Lys Pro Asn
145          150          155          160
Asn Asp Phe His Phe Glu Val Phe Asn Phe Val Pro Cys Ser Ile Cys
          165          170          175
Ser Asn Asn Pro Thr Cys Trp Ala Ile Cys Lys Arg Ile Pro Asn Lys
          180          185          190
Lys Pro Gly Lys Lys Thr Thr Thr Lys Pro Thr Lys Lys Pro Thr Ile
          195          200          205
Lys Thr Thr Lys Lys Asp Leu Lys Pro Gln Thr Thr Lys Ser Lys Glu
          210          215          220
Val Leu Thr Thr Lys Pro Thr Glu Lys Pro Thr Ile Asn Thr Thr Lys
225          230          235          240
Thr Asn Ile Arg Thr Thr Leu Leu Ile Ser Asn Thr Thr Gly Asn Pro
          245          250          255
Glu His Thr Ser Gln Lys Glu Thr Leu His Ser Thr Thr Ser Glu Gly
          260          265          270
Asn Pro Ser Pro Ser Gln Val Tyr Thr Thr Ser Glu Tyr Leu Ser Gln
          275          280          285
Ser Leu Ser Pro Ser Asn Thr Thr Tyr Tyr
          290          295

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<210> 391

<211> 574
 <212> PRT
 <213> Human respiratory syncytial virus

<220>
 <223> fusion glycoprotein of Human respiratory syncytial virus

<400> 391
 Met Glu Leu Pro Ile Leu Lys Ala Asn Ala Ile Thr Thr Ile Leu Ala
 1 5 10 15
 Ala Val Thr Leu Cys Phe Val Ser Ser Gln Asn Ile Thr Glu Glu Phe
 20 25 30
 Tyr Gln Ser Thr Cys Ser Ala Val Ser Lys Gly Tyr Leu Ser Ala Leu
 35 40 45
 Arg Thr Gly Trp Tyr Thr Ser Val Ile Thr Ile Glu Leu Ser Asn Ile
 50 55 60
 Lys Glu Asn Lys Cys Asn Gly Thr Asp Ala Lys Val Lys Leu Ile Lys
 65 70 75 80
 Gln Glu Leu Asp Lys Tyr Lys Asn Ala Val Thr Glu Leu Gln Leu Leu
 85 90 95
 Met Gln Ser Thr Pro Ala Ala Asn Asn Arg Ala Arg Arg Glu Leu Pro
 100 105 110
 Arg Phe Met Asn Tyr Thr Leu Asn Asn Thr Lys Asn Thr Asn Val Thr
 115 120 125
 Leu Ser Lys Lys Arg Lys Arg Arg Phe Leu Gly Phe Leu Leu Gly Val
 130 135 140
 Gly Ser Ala Ile Ala Ser Gly Ile Ala Val Ser Lys Val Leu His Leu
 145 150 155 160
 Glu Gly Glu Val Asn Lys Ile Lys Ser Ala Leu Leu Ser Thr Asn Lys
 165 170 175
 Ala Val Val Ser Leu Ser Asn Gly Val Ser Val Leu Thr Ser Lys Val
 180 185 190
 Leu Asp Leu Lys Asn Tyr Ile Asp Lys Gln Leu Leu Pro Ile Val Asn
 195 200 205
 Lys Gln Ser Cys Ser Ile Ser Asn Ile Glu Thr Val Ile Glu Phe Gln
 210 215 220
 Gln Lys Asn Asn Arg Leu Leu Glu Ile Thr Arg Glu Phe Ser Val Asn
 225 230 235 240
 Ala Gly Val Thr Thr Pro Val Ser Thr Tyr Met Leu Thr Asn Ser Glu
 245 250 255
 Leu Leu Ser Leu Ile Asn Asp Met Pro Ile Thr Asn Asp Gln Lys Lys
 260 265 270
 Leu Met Ser Asn Asn Val Gln Ile Val Arg Gln Gln Ser Tyr Ser Ile
 275 280 285
 Met Ser Ile Ile Lys Glu Glu Val Leu Ala Tyr Val Val Gln Leu Pro
 290 295 300
 Leu Tyr Gly Val Ile Asp Thr Pro Cys Trp Lys Leu His Thr Ser Pro
 305 310 315 320
 Leu Cys Thr Thr Asn Thr Lys Glu Gly Ser Asn Ile Cys Leu Thr Arg
 325 330 335
 Thr Asp Arg Gly Trp Tyr Cys Asp Asn Ala Gly Ser Val Ser Phe Phe
 340 345 350
 Pro Gln Ala Glu Thr Cys Lys Val Gln Ser Asn Arg Val Phe Cys Asp
 355 360 365
 Thr Met Asn Ser Leu Thr Leu Pro Ser Glu Val Asn Leu Cys Asn Val
 370 375 380
 Asp Ile Phe Asn Pro Lys Tyr Asp Cys Lys Ile Met Thr Ser Lys Thr
 385 390 395 400
 Asp Val Ser Ser Ser Val Ile Thr Ser Leu Gly Ala Ile Val Ser Cys
 405 410 415
 Tyr Gly Lys Thr Lys Cys Thr Ala Ser Asn Lys Asn Arg Gly Ile Ile


```

          420          425          430
Lys Thr Phe Ser Asn Gly Cys Asp Tyr Val Ser Asn Lys Gly Val Asp
          435          440          445
Thr Val Ser Val Gly Asn Thr Leu Tyr Tyr Val Asn Lys Gln Glu Gly
          450          455          460
Lys Asn Leu Tyr Val Lys Gly Glu Pro Ile Ile Asn Phe Tyr Asp Pro
465          470          475          480
Leu Val Phe Pro Ser Asp Glu Phe Asp Ala Ser Ile Ser Gln Val Asn
          485          490          495
Glu Lys Ile Asn Gln Ser Leu Ala Phe Ile Arg Lys Ser Asp Glu Leu
          500          505          510
Leu His Asn Val Asn Ala Gly Lys Ser Thr Thr Asn Ile Met Ile Thr
          515          520          525
Thr Ile Ile Ile Val Ile Ile Val Ile Leu Leu Ser Leu Ile Ala Val
          530          535          540
Gly Leu Leu Leu Tyr Cys Lys Ala Arg Ser Thr Pro Val Thr Leu Ser
545          550          555          560
Lys Asp Gln Leu Ser Gly Ile Asn Asn Ile Ala Phe Ser Ser
          565          570

```

<210> 392
 <211> 64
 <212> PRT
 <213> Human respiratory syncytial virus

<220>
 <223> small hydrophobic protein of Human respiratory syncytial virus

```

<400> 392
Met Glu Asn Thr Ser Ile Thr Ile Glu Phe Ser Ser Lys Phe Trp Pro
  1          5          10          15
Tyr Phe Thr Leu Ile His Met Ile Thr Thr Ile Ile Ser Leu Leu Ile
          20          25          30
Ile Ile Ser Ile Met Ile Ala Ile Leu Asn Lys Leu Cys Glu Tyr Asn
          35          40          45
Ala Phe His Asn Lys Thr Phe Glu Leu Pro Arg Ala Arg Ile Asn Thr
          50          55          60

```

<210> 393
 <211> 2165
 <212> PRT
 <213> Human respiratory syncytial virus (strain A2)

<220>
 <223> RNA polymerase beta subunit (Large structural protein) (L protein)
 of Human respiratory syncytial virus

```

<400> 393
Met Asp Pro Ile Ile Asn Gly Asn Ser Ala Asn Val Tyr Leu Thr Asp
  1          5          10          15
Ser Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Cys Asn Ala Leu Gly
          20          25          30
Ser Tyr Ile Phe Asn Gly Pro Tyr Leu Lys Asn Asp Tyr Thr Asn Leu
          35          40          45
Ile Ser Arg Gln Asn Pro Leu Ile Glu His Met Asn Leu Lys Lys Leu
          50          55          60
Asn Ile Thr Gln Ser Leu Ile Ser Lys Tyr His Lys Gly Glu Ile Lys
65          70          75          80
Leu Glu Glu Pro Thr Tyr Phe Gln Ser Leu Leu Met Thr Tyr Lys Ser

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NY2: 1449616.1

Asp	Lys	Ser	Arg	Arg	Val	Leu	Glu	Tyr	Tyr	Leu	Arg	Asp	Asn	Lys	Phe	580	585	590
Asn	Glu	Cys	Asp	Leu	Tyr	Asn	Cys	Val	Val	Asn	Gln	Ser	Tyr	Leu	Asn	595	600	605
Asn	Pro	Asn	His	Val	Val	Ser	Leu	Thr	Gly	Lys	Glu	Arg	Glu	Leu	Ser	610	615	620
Val	Gly	Arg	Met	Phe	Ala	Met	Gln	Pro	Gly	Met	Phe	Arg	Gln	Val	Gln	625	630	635
Ile	Leu	Ala	Glu	Lys	Met	Ile	Ala	Glu	Asn	Ile	Leu	Gln	Phe	Phe	Pro	645	650	655
Glu	Ser	Leu	Thr	Arg	Tyr	Gly	Asp	Leu	Glu	Leu	Gln	Lys	Ile	Leu	Glu	660	665	670
Leu	Lys	Ala	Gly	Ile	Ser	Asn	Lys	Ser	Asn	Arg	Tyr	Asn	Asp	Asn	Tyr	675	680	685
Asn	Asn	Tyr	Ile	Ser	Lys	Cys	Ser	Ile	Ile	Thr	Asp	Leu	Ser	Lys	Phe	690	695	700
Asn	Gln	Ala	Phe	Arg	Tyr	Glu	Thr	Ser	Cys	Ile	Cys	Ser	Asp	Val	Leu	705	710	715
Asp	Glu	Leu	His	Gly	Val	Gln	Ser	Leu	Phe	Ser	Trp	Leu	His	Leu	Thr	725	730	735
Ile	Pro	His	Val	Thr	Ile	Ile	Cys	Thr	Tyr	Arg	His	Ala	Pro	Pro	Tyr	740	745	750
Ile	Gly	Asp	His	Ile	Val	Asp	Leu	Asn	Asn	Val	Asp	Glu	Gln	Ser	Gly	755	760	765
Leu	Tyr	Arg	Tyr	His	Met	Gly	Gly	Ile	Glu	Gly	Trp	Cys	Gln	Lys	Leu	770	775	780
Trp	Thr	Ile	Glu	Ala	Ile	Ser	Leu	Leu	Asp	Leu	Ile	Ser	Leu	Lys	Gly	785	790	795
Lys	Phe	Ser	Ile	Thr	Ala	Leu	Ile	Asn	Gly	Asp	Asn	Gln	Ser	Ile	Asp	805	810	815
Ile	Ser	Lys	Pro	Ile	Arg	Leu	Met	Glu	Gly	Gln	Thr	His	Ala	Gln	Ala	820	825	830
Asp	Tyr	Leu	Leu	Ala	Leu	Asn	Ser	Leu	Lys	Leu	Leu	Tyr	Lys	Glu	Tyr	835	840	845
Ala	Gly	Ile	Gly	His	Lys	Leu	Lys	Gly	Thr	Glu	Thr	Tyr	Ile	Ser	Arg	850	855	860
Asp	Met	Gln	Phe	Met	Ser	Lys	Thr	Ile	Gln	His	Asn	Gly	Val	Tyr	Tyr	865	870	875
Pro	Ala	Ser	Ile	Lys	Lys	Val	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	885	890	895
Ile	Leu	Asp	Asp	Phe	Lys	Val	Ser	Leu	Glu	Ser	Ile	Gly	Ser	Leu	Thr	900	905	910
Gln	Glu	Leu	Glu	Tyr	Arg	Gly	Glu	Ser	Leu	Leu	Cys	Ser	Leu	Ile	Phe	915	920	925
Arg	Asn	Val	Trp	Leu	Tyr	Asn	Gln	Ile	Ala	Leu	Gln	Leu	Lys	Asn	His	930	935	940
Ala	Leu	Cys	Asn	Asn	Lys	Leu	Tyr	Leu	Asp	Ile	Leu	Lys	Val	Leu	Lys	945	950	955
His	Leu	Lys	Thr	Phe	Phe	Asn	Leu	Asp	Asn	Ile	Asp	Thr	Ala	Leu	Thr	965	970	975
Leu	Tyr	Met	Asn	Leu	Pro	Met	Leu	Phe	Gly	Gly	Gly	Asp	Pro	Asn	Leu	980	985	990
Leu	Tyr	Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	995	1000	1005
Ile	Val	His	Ser	Val	Phe	Ile	Leu	Ser	Tyr	Tyr	Thr	Asn	His	Asp	Leu	1010	1015	1020
Lys	Asp	Lys	Leu	Gln	Asp	Leu	Ser	Asp	Asp	Arg	Leu	Asn	Lys	Phe	Leu	1025	1030	1035
Thr	Cys	Ile	Ile	Thr	Phe	Asp	Lys	Asn	Pro	Asn	Ala	Glu	Phe	Val	Thr	1045	1050	1055
Leu	Met	Arg	Asp	Pro	Gln	Ala	Leu	Gly	Ser	Glu	Arg	Gln	Ala	Lys	Ile			

NY2: 1449616.1

Lys Leu Glu Cys Asp Met Asn Thr Ser Asp Leu Leu Cys Val Leu Glu
 1555 1560 1565
 Leu Ile Asp Ser Ser Tyr Trp Lys Ser Met Ser Lys Val Phe Leu Glu
 1570 1575 1580
 Gln Lys Val Ile Lys Tyr Ile Leu Ser Gln Asp Ala Ser Leu His Arg
 1585 1590 1595 1600
 Val Lys Gly Cys His Ser Phe Lys Leu Trp Phe Leu Lys Arg Leu Asn
 1605 1610 1615
 Val Ala Glu Phe Thr Val Cys Pro Trp Val Val Asn Ile Asp Tyr His
 1620 1625 1630
 Pro Thr His Met Lys Ala Ile Leu Thr Tyr Ile Asp Leu Val Arg Met
 1635 1640 1645
 Gly Leu Ile Asn Ile Asp Arg Ile His Ile Lys Asn Lys His Lys Phe
 1650 1655 1660
 Asn Asp Glu Phe Tyr Thr Ser Asn Leu Phe Tyr Ile Asn Tyr Asn Phe
 1665 1670 1675 1680
 Ser Asp Asn Thr His Leu Leu Thr Lys His Ile Arg Ile Ala Asn Ser
 1685 1690 1695
 Glu Leu Glu Asn Asn Tyr Asn Lys Leu Tyr His Pro Thr Pro Glu Thr
 1700 1705 1710
 Leu Glu Asn Ile Leu Ala Asn Pro Ile Lys Ser Asn Asp Lys Lys Thr
 1715 1720 1725
 Leu Asn Asp Tyr Cys Ile Gly Lys Asn Val Asp Ser Ile Met Leu Pro
 1730 1735 1740
 Leu Leu Ser Asn Lys Lys Leu Ile Lys Ser Ser Ala Met Ile Arg Thr
 1745 1750 1755 1760
 Asn Tyr Ser Lys Gln Asp Leu Tyr Asn Leu Phe Pro Met Val Val Ile
 1765 1770 1775
 Asp Arg Ile Ile Asp His Ser Gly Asn Thr Ala Lys Ser Asn Gln Leu
 1780 1785 1790
 Tyr Thr Thr Thr Ser His Gln Ile Ser Leu Val His Asn Ser Thr Ser
 1795 1800 1805
 Leu Tyr Cys Met Leu Pro Trp His His Ile Asn Arg Phe Asn Phe Val
 1810 1815 1820
 Phe Ser Ser Thr Gly Cys Lys Ile Ser Ile Glu Tyr Ile Leu Lys Asp
 1825 1830 1835 1840
 Leu Lys Ile Lys Asp Pro Asn Cys Ile Ala Phe Ile Gly Glu Gly Ala
 1845 1850 1855
 Gly Asn Leu Leu Leu Arg Thr Val Val Glu Leu His Pro Asp Ile Arg
 1860 1865 1870
 Tyr Ile Tyr Arg Ser Leu Lys Asp Cys Asn Asp His Ser Leu Pro Ile
 1875 1880 1885
 Glu Phe Leu Arg Leu Tyr Asn Gly His Ile Asn Ile Asp Tyr Gly Glu
 1890 1895 1900
 Asn Leu Thr Ile Pro Ala Thr Asp Ala Thr Asn Asn Ile His Trp Ser
 1905 1910 1915 1920
 Tyr Leu His Ile Lys Phe Ala Glu Pro Ile Ser Leu Phe Val Cys Asp
 1925 1930 1935
 Ala Glu Leu Ser Val Thr Val Asn Trp Ser Lys Ile Ile Ile Glu Trp
 1940 1945 1950
 Ser Lys His Val Arg Lys Cys Lys Tyr Cys Ser Ser Val Asn Lys Cys
 1955 1960 1965
 Met Leu Ile Val Lys Tyr His Ala Gln Asp Asp Ile Asp Phe Lys Leu
 1970 1975 1980
 Asp Asn Ile Thr Ile Leu Lys Thr Tyr Val Cys Leu Gly Ser Lys Leu
 1985 1990 1995 2000
 Lys Gly Ser Glu Val Tyr Leu Val Leu Thr Ile Gly Pro Ala Asn Ile
 2005 2010 2015
 Phe Pro Val Phe Asn Val Val Gln Asn Ala Lys Leu Ile Leu Ser Arg
 2020 2025 2030
 Thr Lys Asn Phe Ile Met Pro Lys Lys Ala Asp Lys Glu Ser Ile Asp

2035	2040	2045
Ala Asn Ile Lys Ser Leu Ile Pro Phe Leu Cys Tyr Pro Ile Thr Lys		
2050	2055	2060
Lys Gly Ile Asn Thr Ala Leu Ser Lys Leu Lys Ser Val Val Ser Gly		
2065	2070	2075
Asp Ile Leu Ser Tyr Ser Ile Ala Gly Arg Asn Glu Val Phe Ser Asn		2080
	2085	2090
Lys Leu Ile Asn His Lys His Met Asn Ile Leu Lys Trp Phe Asn His		2095
	2100	2105
Val Leu Asn Phe Arg Ser Thr Glu Leu Asn Tyr Asn His Leu Tyr Met		2110
	2115	2120
Val Glu Ser Thr Tyr Pro Tyr Leu Ser Glu Leu Leu Asn Ser Leu Thr		2125
	2130	2135
Thr Asn Glu Leu Lys Lys Leu Ile Lys Ile Thr Gly Ser Leu Leu Tyr		2140
2145	2150	2155
Asn Phe His Asn Glu		2160
	2165	

<210> 394

<211> 241

<212> PRT

<213> Human respiratory syncytial virus

<220>

<223> phosphoprotein P of Human respiratory syncytial virus

<400> 394

Met Glu Lys Phe Ala Pro Glu Phe His Gly Glu Asp Ala Asn Asn Arg		
1	5	10
Ala Thr Lys Phe Leu Glu Ser Ile Lys Gly Lys Phe Thr Ser Pro Lys		15
	20	25
Asp Pro Lys Lys Lys Asp Ser Ile Ile Ser Val Asn Ser Ile Asp Ile		30
	35	40
Glu Val Thr Lys Glu Ser Pro Ile Thr Ser Asn Ser Thr Ile Met Asn		45
	50	55
Pro Thr Asn Glu Thr Asp Asp Thr Val Gly Asn Lys Pro Asn Tyr Gln		60
65	70	75
Arg Lys Pro Leu Val Ser Phe Lys Glu Asp Pro Met Leu Ser Asp Asn		80
	85	90
Pro Phe Ser Lys Leu Tyr Lys Glu Thr Ile Glu Thr Phe Asp Asn Asn		95
	100	105
Glu Glu Glu Ser Ser Tyr Ser Tyr Glu Glu Ile Asn Asp Gln Thr Asn		110
	115	120
Asp Asn Ile Thr Ala Arg Leu Asp Arg Ile Asp Glu Lys Leu Ser Glu		125
	130	135
Ile Leu Gly Met Leu His Thr Leu Val Val Ala Ser Ala Gly Pro Thr		140
145	150	155
Ser Ala Arg Asp Gly Ile Arg Asp Ala Met Val Gly Leu Arg Glu Glu		160
	165	170
Met Ile Glu Lys Ile Arg Thr Glu Ala Leu Met Thr Asn Asn Arg Leu		175
	180	185
Glu Ala Met Ala Arg Leu Arg Asn Glu Glu Ser Glu Lys Met Ala Lys		190
	195	200
Asp Thr Ser Asp Glu Val Ser Leu Asn Pro Thr Ser Glu Lys Leu Asn		205
	210	215
Asn Leu Leu Glu Gly Asn Asp Ser Asp Asp Leu Ser Leu Glu Asp		220
225	230	235
Phe		240

<210> 395

<211> 83
 <212> PRT
 <213> Human respiratory syncytial virus

<220>
 <223> attachment glycoprotein G of Human respiratory syncytial virus

<400> 395
 Lys Arg Asp Pro Lys Thr Pro Ala Lys Met Leu Asn Lys Glu Thr Thr
 1 5 10 15
 Thr Asn Pro Thr Lys Asn Leu Thr Leu Lys Thr Thr Glu Arg Asp Thr
 20 25 30
 Ser Thr Ser Gln Ser Thr Val Leu Asp Thr Ser Thr Ser Lys His Ile
 35 40 45
 Ile Leu Gln Gln Ser Leu His Ser Thr Thr Pro Glu Asn Thr Pro Asn
 50 55 60
 Phe Thr Gln Thr Pro Thr Ala Ser Glu Pro Ser Thr Ser Asn Ser Thr
 65 70 75 80
 Gln Lys Thr

<210> 396
 <211> 391
 <212> PRT
 <213> human respiratory syncytial virus (strain 18537)

<220>
 <223> nucleocapsid protein of Human respiratory syncytial virus

<400> 396
 Met Ala Leu Ser Lys Val Lys Leu Asn Asp Thr Leu Asn Lys Asp Gln
 1 5 10 15
 Leu Leu Ser Ser Ser Lys Tyr Thr Ile Gln Arg Ser Thr Gly Asp Asn
 20 25 30
 Ile Asp Thr Pro Asn Tyr Asp Val Gln Lys His Leu Asn Lys Leu Cys
 35 40 45
 Gly Met Leu Leu Ile Thr Glu Asp Ala Asn His Lys Phe Thr Gly Leu
 50 55 60
 Ile Gly Met Leu Tyr Ala Met Ser Arg Leu Gly Arg Glu Asp Thr Ile
 65 70 75 80
 Lys Ile Leu Lys Asp Ala Gly Tyr His Val Lys Ala Asn Gly Val Asp
 85 90 95
 Ile Thr Thr Tyr Arg Gln Asp Ile Asn Gly Lys Glu Met Lys Phe Glu
 100 105 110
 Val Leu Thr Leu Ser Ser Leu Thr Ser Glu Ile Gln Val Asn Ile Glu
 115 120 125
 Ile Glu Ser Arg Lys Ser Tyr Lys Lys Leu Leu Lys Glu Met Gly Glu
 130 135 140
 Val Ala Pro Glu Tyr Arg His Asp Ser Pro Asp Cys Gly Met Ile Ile
 145 150 155 160
 Leu Cys Ile Ala Ala Leu Val Ile Thr Lys Leu Ala Ala Gly Asp Arg
 165 170 175
 Ser Gly Leu Thr Ala Val Ile Arg Arg Ala Asn Asn Val Leu Lys Asn
 180 185 190
 Glu Ile Lys Arg Tyr Lys Gly Leu Ile Pro Lys Asp Ile Ala Asn Ser
 195 200 205
 Phe Tyr Glu Val Phe Glu Lys His Pro His Leu Ile Asp Val Phe Val
 210 215 220
 His Phe Gly Ile Ala Gln Ser Ser Thr Arg Gly Gly Ser Arg Val Glu
 225 230 235 240

Gly	Ile	Phe	Ala	Gly	Leu	Phe	Met	Asn	Ala	Tyr	Gly	Ser	Gly	Gln	Val
				245					250					255	
Met	Leu	Arg	Trp	Gly	Val	Leu	Ala	Lys	Ser	Val	Lys	Asn	Ile	Met	Leu
			260					265					270		
Gly	His	Ala	Ser	Val	Gln	Ala	Glu	Met	Glu	Gln	Val	Val	Glu	Val	Tyr
		275					280					285			
Glu	Tyr	Ala	Gln	Lys	Leu	Gly	Gly	Glu	Ala	Gly	Phe	Tyr	His	Ile	Leu
	290					295					300				
Asn	Asn	Pro	Lys	Ala	Ser	Leu	Leu	Ser	Leu	Thr	Gln	Phe	Pro	Asn	Phe
305					310					315					320
Ser	Ser	Val	Val	Leu	Gly	Asn	Ala	Ala	Gly	Leu	Gly	Ile	Met	Gly	Glu
				325					330					335	
Tyr	Arg	Gly	Thr	Pro	Arg	Asn	Gln	Asp	Leu	Tyr	Asp	Ala	Ala	Lys	Ala
			340					345					350		
Tyr	Ala	Glu	Gln	Leu	Lys	Glu	Asn	Gly	Val	Ile	Asn	Tyr	Ser	Val	Leu
		355					360					365			
Asp	Leu	Thr	Ala	Glu	Glu	Leu	Glu	Ala	Ile	Lys	His	Gln	Leu	Asn	Pro
	370					375					380				
Lys	Glu	Asp	Asp	Val	Glu	Leu									
385					390										

<210> 397

<211> 391

<212> PRT

<213> Human respiratory syncytial virus

<220>

<223> nucleoprotein (N) of Human respiratory syncytial virus

<400> 397

Met	Ala	Leu	Ser	Lys	Val	Lys	Leu	Asn	Asp	Thr	Leu	Asn	Lys	Asp	Gln
1				5					10					15	
Leu	Leu	Ser	Ser	Ser	Lys	Tyr	Thr	Ile	Gln	Arg	Ser	Thr	Gly	Asp	Ser
			20					25					30		
Ile	Asp	Thr	Pro	Asn	Tyr	Asp	Val	Gln	Lys	His	Ile	Asn	Lys	Leu	Cys
		35				40						45			
Gly	Met	Leu	Leu	Ile	Thr	Glu	Asp	Ala	Asn	His	Lys	Phe	Thr	Gly	Leu
	50				55						60				
Ile	Gly	Met	Leu	Tyr	Ala	Met	Ser	Arg	Leu	Gly	Arg	Glu	Asp	Thr	Ile
65				70					75						80
Lys	Ile	Leu	Arg	Asp	Ala	Gly	Tyr	His	Val	Lys	Ala	Asn	Gly	Val	Asp
			85					90					95		
Val	Thr	Thr	His	Arg	Gln	Asp	Ile	Asn	Gly	Lys	Glu	Met	Lys	Phe	Glu
			100				105						110		
Val	Leu	Thr	Leu	Ser	Ser	Leu	Thr	Glu	Ile	Gln	Ile	Asn	Ile	Glu	
		115				120					125				
Ile	Glu	Ser	Arg	Lys	Ser	Tyr	Lys	Lys	Met	Leu	Lys	Glu	Met	Gly	Glu
	130				135						140				
Val	Ala	Pro	Glu	Tyr	Arg	His	Asp	Ser	Pro	Asp	Cys	Gly	Met	Ile	Ile
145					150					155					160
Leu	Cys	Ile	Ala	Ala	Leu	Val	Ile	Thr	Lys	Leu	Ala	Ala	Gly	Asp	Arg
			165					170						175	
Ser	Gly	Leu	Thr	Ala	Val	Ile	Arg	Arg	Ala	Asn	Asn	Val	Leu	Lys	Asn
			180				185						190		
Glu	Met	Lys	Arg	Tyr	Lys	Gly	Leu	Pro	Lys	Asp	Ile	Ala	Asn	Ser	
		195				200					205				
Phe	Tyr	Glu	Val	Phe	Glu	Lys	Tyr	Pro	His	Phe	Ile	Asp	Val	Phe	Val
	210					215					220				
His	Phe	Gly	Ile	Ala	Gln	Ser	Ser	Thr	Arg	Gly	Gly	Ser	Arg	Val	Glu
225					230					235					240

Asn Trp Lys His Thr Ala Thr Arg Phe Ala Ile Lys Pro Met Glu Asp
245 250 255

<210> 399
<211> 1185
<212> DNA
<213> Human metapneumovirus

<220>
<221> CDS
<222> (1)...(1185)
<223> Nucleoprotein (N)

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<400> 399
atg tct ctt caa ggg att cac ctg agt gat tta tca tac aag cat gct 48
Met Ser Leu Gln Gly Ile His Leu Ser Asp Leu Ser Tyr Lys His Ala
1 5 10 15
ata tta aaa gag tct cag tac aca ata aaa aga gat gtg ggt aca aca 96
Ile Leu Lys Glu Ser Gln Tyr Thr Ile Lys Arg Asp Val Gly Thr Thr
20 25 30
act gca gtg aca ccc tca tca ttg caa caa gaa ata aca ctg ttg tgt 144
Thr Ala Val Thr Pro Ser Ser Leu Gln Gln Glu Ile Thr Leu Leu Cys
35 40 45
gga gaa att ctg tat gct aaa cat gct gac tac aaa tat gct gca gaa 192
Gly Glu Ile Leu Tyr Ala Lys His Ala Asp Tyr Lys Tyr Ala Ala Glu
50 55 60
ata gga ata caa tat att agc aca gct tta gga tca gag aga gtg cag 240
Ile Gly Ile Gln Tyr Ile Ser Thr Ala Leu Gly Ser Glu Arg Val Gln
65 70 75 80
cag att ctg agg aac tca ggc agt gaa gtc caa gtg gtc tta acc aga 288
Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Arg
85 90 95
acg tac tct ctg ggg aaa att aaa aac aat aaa gga gaa gat tta cag 336
Thr Tyr Ser Leu Gly Lys Ile Lys Asn Asn Lys Gly Glu Asp Leu Gln
100 105 110
atg tta gac ata cac ggg gta gag aag agc tgg gta gaa gag ata gac 384
Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Val Glu Glu Ile Asp
115 120 125
aaa gaa gca agg aaa aca atg gca acc ttg ctt aag gaa tca tca ggt 432
Lys Glu Ala Arg Lys Thr Met Ala Thr Leu Leu Lys Glu Ser Ser Gly
130 135 140
aat atc cca caa aat cag agg ccc tca gca cca gac aca ccc ata atc 480
Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile
145 150 155 160
tta tta tgt gta ggt gcc tta ata ttc act aaa cta gca tca acc ata 528
Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile
165 170 175
gaa gtg gga cta gag acc aca gtc aga agg gct aac cgt gta cta agt 576
Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser
180 185 190
gat gca ctc aag aga tac cct aga atg gac ata cca aag att gcc aga 624
Asp Ala Leu Lys Arg Tyr Pro Arg Met Asp Ile Pro Lys Ile Ala Arg
195 200 205
tcc ttc tat gac tta ttt gaa caa aaa gtg tat cac aga agt ttg ttc 672
Ser Phe Tyr Asp Leu Phe Glu Gln Lys Val Tyr His Arg Ser Leu Phe
210 215 220
att gag tat ggc aaa gca tta ggc tca tca tct aca ggc agc aaa gca 720
Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala
225 230 235 240
gaa agt cta ttt gtt aat ata ttc atg caa gct tat ggg gcc ggt caa 768

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Glu	Ser	Leu	Phe	Val	Asn	Ile	Phe	Met	Gln	Ala	Tyr	Gly	Ala	Gly	Gln	
				245					250					255		
aca	atg	cta	agg	tgg	ggg	gtc	att	gcc	agg	tca	tcc	aac	aat	ata	atg	816
Thr	Met	Leu	Arg	Trp	Gly	Val	Ile	Ala	Arg	Ser	Ser	Asn	Asn	Ile	Met	
			260					265					270			
tta	gga	cat	gta	tcc	gtc	caa	gct	gag	tta	aaa	cag	gtc	aca	gaa	gtc	864
Leu	Gly	His	Val	Ser	Val	Gln	Ala	Glu	Leu	Lys	Gln	Val	Thr	Glu	Val	
		275					280				285					
tat	gac	ttg	gtg	cga	gaa	atg	ggc	cct	gaa	tct	gga	ctt	cta	cat	tta	912
Tyr	Asp	Leu	Val	Arg	Glu	Met	Gly	Pro	Glu	Ser	Gly	Leu	Leu	His	Leu	
	290					295					300					
agg	caa	agc	cca	aaa	gct	gga	ctg	tta	tca	cta	gcc	aac	tgt	ccc	aac	960
Arg	Gln	Ser	Pro	Lys	Ala	Gly	Leu	Leu	Ser	Leu	Ala	Asn	Cys	Pro	Asn	
305				310					315					320		
ttt	gca	agt	gtt	gtt	ctc	gga	aat	gcc	tca	ggc	tta	ggc	ata	atc	ggg	1008
Phe	Ala	Ser	Val	Val	Leu	Gly	Asn	Ala	Ser	Gly	Leu	Gly	Ile	Ile	Gly	
			325					330					335			
atg	tat	cga	ggg	aga	gta	cca	aac	aca	gaa	tta	ttt	tca	gca	gct	gaa	1056
Met	Tyr	Arg	Gly	Arg	Val	Pro	Asn	Thr	Glu	Leu	Phe	Ser	Ala	Ala	Glu	
		340						345					350			
agt	tat	gcc	aaa	agt	ttg	aaa	gaa	agc	aat	aaa	ata	aat	ttc	tct	tca	1104
Ser	Tyr	Ala	Lys	Ser	Leu	Lys	Glu	Ser	Asn	Lys	Ile	Asn	Phe	Ser	Ser	
		355					360					365				
tta	gga	ctt	aca	gat	gaa	gag	aaa	gag	gct	gca	gaa	cat	ttc	tta	aat	1152
Leu	Gly	Leu	Thr	Asp	Glu	Glu	Lys	Glu	Ala	Ala	Glu	His	Phe	Leu	Asn	
		370				375					380					
gtg	agt	gac	gac	agt	caa	aat	gat	tat	gag	taa						1185
Val	Ser	Asp	Asp	Ser	Gln	Asn	Asp	Tyr	Glu	*						
385				390												

<210> 400

<211> 885

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(885)

<223> Phosphoprotein (P)

<400> 400

atg	tca	ttc	cct	gaa	gga	aaa	gat	att	ctt	ttc	atg	ggg	aat	gaa	gca	48
Met	Ser	Phe	Pro	Glu	Gly	Lys	Asp	Ile	Leu	Phe	Met	Gly	Asn	Glu	Ala	
1			5					10					15			
gca	aaa	tta	gca	gaa	gct	ttc	cag	aaa	tca	tta	aga	aaa	cca	ggg	cat	96
Ala	Lys	Leu	Ala	Glu	Ala	Phe	Gln	Lys	Ser	Leu	Arg	Lys	Pro	Gly	His	
			20					25					30			
aaa	aga	tct	caa	tct	att	ata	gga	gaa	aaa	gtg	aat	act	gta	tca	gaa	144
Lys	Arg	Ser	Gln	Ser	Ile	Ile	Gly	Glu	Lys	Val	Asn	Thr	Val	Ser	Glu	
		35					40					45				
aca	ttg	gaa	tta	cct	act	atc	agt	aga	cct	gca	aaa	cca	acc	ata	ccg	192
Thr	Leu	Glu	Leu	Pro	Thr	Ile	Ser	Arg	Pro	Ala	Lys	Pro	Thr	Ile	Pro	
	50					55				60						
tca	gaa	cca	aag	tta	gca	tgg	aca	gat	aaa	ggg	ggg	gca	acc	aaa	act	240
Ser	Glu	Pro	Lys	Leu	Ala	Trp	Thr	Asp	Lys	Gly	Gly	Ala	Thr	Lys	Thr	
	65				70				75					80		
gaa	ata	aag	caa	gca	atc	aaa	gtc	atg	gat	ccc	att	gaa	gaa	gaa	gag	288
Glu	Ile	Lys	Gln	Ala	Ile	Lys	Val	Met	Asp	Pro	Ile	Glu	Glu	Glu	Glu	
			85					90					95			
tct	acc	gag	aag	aag	gtg	cta	ccc	tcc	agt	gat	ggg	aaa	acc	cct	gca	336
Ser	Thr	Glu	Lys	Lys	Val	Leu	Pro	Ser	Ser	Asp	Gly	Lys	Thr	Pro	Ala	

	100		105		110	
gaa aag aaa ctg aaa cca tca act aac acc aaa aag aag gtt tca ttt						384
Glu Lys Lys Leu Lys Pro Ser Thr Asn Thr Lys Lys Lys Val Ser Phe						
	115		120		125	
aca cca aat gaa cca ggg aaa tat aca aag ttg gaa aaa gat gct cta						432
Thr Pro Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu						
	130		135		140	
gat ttg ctc tca gat aat gaa gaa gaa gat gca gaa tct tca atc tta						480
Asp Leu Leu Ser Asp Asn Glu Glu Glu Asp Ala Glu Ser Ser Ile Leu						
	145		150		155	160
acc ttt gaa gaa aga gat act tca tca tta agc att gag gcc aga ttg						528
Thr Phe Glu Glu Arg Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu						
	165		170		175	
gaa tca ata gag gag aaa tta agc atg ata tta ggg cta tta aga aca						576
Glu Ser Ile Glu Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr						
	180		185		190	
ctc aac att gct aca gca gga ccc aca gca gca aga gat ggg atc aga						624
Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg						
	195		200		205	
gat gca atg att ggc gta aga gag gaa tta ata gca gac ata ata aag						672
Asp Ala Met Ile Gly Val Arg Glu Glu Leu Ile Ala Asp Ile Ile Lys						
	210		215		220	
gaa gct aaa ggg aaa gca gca gaa atg atg gaa gag gaa atg agt caa						720
Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Glu Met Ser Gln						
	225		230		235	240
cga tca aaa ata gga aat ggt agt gta aaa tta aca gaa aaa gca aaa						768
Arg Ser Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys						
	245		250		255	
gag ctc aac aaa att gtt gaa gat gaa agc aca agt gga gaa tcc gaa						816
Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu						
	260		265		270	
gaa gaa gaa gaa cca aaa gac aca caa gac aat agt caa gaa gat gac						864
Glu Glu Glu Glu Pro Lys Asp Thr Gln Asp Asn Ser Gln Glu Asp Asp						
	275		280		285	
att tac cag tta att atg tag						885
Ile Tyr Gln Leu Ile Met *						
	290					

<210> 401

<211> 765

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(765)

<223> Matrix Protein (M)

<400> 401

atg gag tcc tac cta gta gac acc tat caa ggc att cct tac aca gca	48
Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala	
1 5 10 15	

gct gtt caa gtt gat cta ata gaa aag gac ctg tta cct gca agc cta	96
Ala Val Gln Val Asp Leu Ile Glu Lys Asp Leu Leu Pro Ala Ser Leu	
20 25 30	

aca ata tgg ttc cct ttg ttt cag gcc aac aca cca cca gca gtg ctg	144
Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu	
35 40 45	

ctc gat cag cta aaa acc ctg aca ata acc act ctg tat gct gca tca	192
Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Thr Leu Tyr Ala Ala Ser	

50	55	60	
caa aat ggt cca ata ctc	aaa gtg aat gca tca gcc	caa ggt gca gca	240
Gln Asn Gly Pro Ile	Leu Lys Val Asn Ala Ser	Ala Gln Gly Ala Ala	
65	70	75	80
atg tct gta ctt ccc	aaa aaa ttt gaa gtc	aat gcg act gta gca ctc	288
Met Ser Val Leu Pro	Lys Lys Phe Glu Val	Asn Ala Thr Val Ala Leu	
85	90	95	
gat gaa tat agc aaa	ctg gaa ttt gac aaa	ctc aca gtc tgt gaa gta	336
Asp Glu Tyr Ser Lys	Leu Glu Phe Asp Lys	Leu Thr Val Cys Glu Val	
100	105	110	
aaa aca gtt tac tta	aca acc atg aaa cca	tac ggg atg gta tca aaa	384
Lys Thr Val Tyr Leu	Thr Thr Met Lys Pro	Tyr Gly Met Val Ser Lys	
115	120	125	
ttt gtg agc tca gcc	aaa tca gtt ggc aaa	aaa aca cat gat cta atc	432
Phe Val Ser Ser Ala	Lys Ser Val Gly Lys	Lys Thr His Asp Leu Ile	
130	135	140	
gca cta tgt gat ttt	atg gat cta gaa aag	aac aca cct gtt aca ata	480
Ala Leu Cys Asp Phe	Met Asp Leu Glu Lys	Asn Thr Pro Val Thr Ile	
145	150	155	160
cca gca ttc atc aaa	tca gtt tca atc aaa	gag agt gag tca gct act	528
Pro Ala Phe Ile Lys	Ser Val Ser Ile Lys	Glu Ser Glu Ser Ala Thr	
165	170	175	
gtt gaa gct gct ata	agc agt gaa gca gac	caa gct cta aca cag gcc	576
Val Glu Ala Ala Ile	Ser Ser Glu Ala Asp	Gln Ala Leu Thr Gln Ala	
180	185	190	
aaa att gca cct tat	gcg gga tta att atg	atc atg act atg aac aat	624
Lys Ile Ala Pro Tyr	Ala Gly Leu Ile Met	Ile Met Thr Met Asn Asn	
195	200	205	
ccc aaa ggc ata ttc	aaa aag ctt gga gct	ggg act caa gtc ata gta	672
Pro Lys Gly Ile Phe	Lys Lys Leu Gly Ala	Gly Thr Gln Val Ile Val	
210	215	220	
gaa cta gga gca tat	gtc cag gct gaa agc	ata agc aaa ata tgc aag	720
Glu Leu Gly Ala Tyr	Val Gln Ala Glu Ser	Ile Ser Lys Ile Cys Lys	
225	230	235	240
act tgg agc cat caa	ggg aca aga tat gtc	ttg aag tcc aga taa	765
Thr Trp Ser His Gln	Gly Thr Arg Tyr Val	Leu Lys Ser Arg *	
245	250		

<210> 402

<211> 564

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(564)

<223> Matrix Protein 2-1 (M2)

<400> 402

atg tct cgc aag gct	ccg tgc aaa tat gaa	gtg cgg ggc aaa tgc	aat	48
Met Ser Arg Lys Ala	Pro Cys Lys Tyr Glu	Val Arg Gly Lys Cys	Asn	
1	5	10	15	
aga gga agt gag tgc	aag ttt aac cac aat	tac tgg agt tgg cca	gat	96
Arg Gly Ser Glu Cys	Lys Phe Asn His Asn	Tyr Trp Ser Trp Pro	Asp	
20	25	30		
aga tac tta tta ata	aga tca aat tat tta	tta aat caa ctt tta	agg	144
Arg Tyr Leu Leu Ile	Arg Ser Asn Tyr Leu	Leu Asn Gln Leu Leu	Arg	
35	40	45		
aac act gat aga gct	gat ggc tta tca ata	ata tca gga gca ggc	aga	192
Asn Thr Asp Arg Ala	Asp Gly Leu Ser Ile	Ile Ser Gly Ala Gly	Arg	
50	55	60		

gaa gat agg aca caa gat ttt gtc cta ggt tcc acc aat gtg gtt caa	240
Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln	
65 70 75 80	
ggt tat att gat gat aac caa agc ata aca aaa gct gca gcc tgt tac	288
Gly Tyr Ile Asp Asp Asn Gln Ser Ile Thr Lys Ala Ala Ala Cys Tyr	
85 90 95	
agt cta cat aat ata atc aaa caa cta caa gaa gtt gaa gtt agg cag	336
Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Val Glu Val Arg Gln	
100 105 110	
gct aga gat aac aaa cta tct gac agc aaa cat gta gca ctt cac aac	384
Ala Arg Asp Asn Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn	
115 120 125	
tta gtc cta tct tat atg gag atg agc aaa act cct gca tct tta atc	432
Leu Val Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile	
130 135 140	
aac aat ctc aag aga ctg ccg aga gag aaa ctg aaa aaa tta gca aag	480
Asn Asn Leu Lys Arg Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Lys	
145 150 155 160	
ctc ata att gac tta tca gca ggt gct gaa aat gac tct tca tat gcc	528
Leu Ile Ile Asp Leu Ser Ala Gly Ala Glu Asn Asp Ser Ser Tyr Ala	
165 170 175	
ttg caa gac agt gaa agc act aat caa gtg cag tga	564
Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln *	
180 185	

<210> 403

<211> 216

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(216)

<223> Matrix Protein 2-2 (M2)

<400> 403

atg act ctt cat atg cct tgc aag aca gtg aaa gca cta atc aag tgc	48
Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys	
1 5 10 15	
agt gag cat ggt cca gtt ttc att act ata gag gtt gat gac atg ata	96
Ser Glu His Gly Pro Val Phe Ile Thr Ile Glu Val Asp Asp Met Ile	
20 25 30	
tgg act cac aag gac tta aaa gaa gct tta tct gat ggg ata gtg aag	144
Trp Thr His Lys Asp Leu Lys Glu Ala Leu Ser Asp Gly Ile Val Lys	
35 40 45	
tct cat act aac att tac aat tgt tat tta gaa aac ata gaa att ata	192
Ser His Thr Asn Ile Tyr Asn Cys Tyr Leu Glu Asn Ile Glu Ile Ile	
50 55 60	
tat gtc aag gct tac tta agt tag	216
Tyr Val Lys Ala Tyr Leu Ser *	
65 70	

<210> 404

<211> 552

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(552)

<223> Small Hydrophobic Protein (SH)

<400> 404

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atg ata aca tta gat gtc att aaa agt gat ggg tct tca aaa aca tgt 48
Met Ile Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Lys Thr Cys
 1           5           10           15
act cac ctc aaa aaa ata att aaa gac cac tct ggt aaa gtg ctt att 96
Thr His Leu Lys Lys Ile Ile Lys Asp His Ser Gly Lys Val Leu Ile
          20           25           30
gta ctt aag tta ata tta gct tta cta aca ttt ctc aca gta aca atc 144
Val Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Leu Thr Val Thr Ile
          35           40           45
acc atc aat tat ata aaa gtg gaa aac aat ctg caa ata tgc cag tca 192
Thr Ile Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ile Cys Gln Ser
          50           55           60
aaa act gaa tca gac aaa aag gac tca tca tca aat acc aca tca gtc 240
Lys Thr Glu Ser Asp Lys Lys Asp Ser Ser Ser Asn Thr Thr Ser Val
          65           70           75           80
aca acc aag act act cta aat cat gat atc aca cag tat ttt aaa agt 288
Thr Thr Lys Thr Thr Leu Asn His Asp Ile Thr Gln Tyr Phe Lys Ser
          85           90           95
ttg att caa agg tat aca aac tct gca ata aac agt gac aca tgc tgg 336
Leu Ile Gln Arg Tyr Thr Asn Ser Ala Ile Asn Ser Asp Thr Cys Trp
          100          105          110
aaa ata aac aga aat caa tgc aca aat ata aca aca tac aaa ttt tta 384
Lys Ile Asn Arg Asn Gln Cys Thr Asn Ile Thr Thr Tyr Lys Phe Leu
          115          120          125
tgt ttt aaa tct gaa gac aca aaa acc aac aat tgt gat aaa ctg aca 432
Cys Phe Lys Ser Glu Asp Thr Lys Thr Asn Asn Cys Asp Lys Leu Thr
          130          135          140
gat tta tgc aga aac aaa cca aaa cca gca gtt gga gtg tat cac ata 480
Asp Leu Cys Arg Asn Lys Pro Lys Pro Ala Val Gly Val Tyr His Ile
          145          150          155          160
gta gaa tgc cat tgt ata tac aca gtt aaa tgg aag tgc tat cat tac 528
Val Glu Cys His Cys Ile Tyr Thr Val Lys Trp Lys Cys Tyr His Tyr
          165          170          175
cca acc gat gaa acc caa tcc taa 552
Pro Thr Asp Glu Thr Gln Ser *
          180

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<210> 405

<211> 2005

<212> PRT

<213> Human metapneumovirus

<220>

<223> RNA-dependent RNA polymerase (L) of Human metapneumovirus

<400> 405

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Met Asp Pro Leu Asn Glu Ser Thr Val Asn Val Tyr Leu Pro Asp Ser
 1           5           10           15
Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Thr Asn Ala Ile Gly Ser
          20           25           30
Cys Leu Leu Lys Arg Pro Tyr Leu Lys Asn Asp Asn Thr Ala Lys Val
          35           40           45
Ala Ile Glu Asn Pro Val Ile Glu His Val Arg Leu Lys Asn Ala Val
          50           55           60
Asn Ser Lys Met Lys Ile Ser Asp Tyr Lys Ile Val Glu Pro Val Asn
          65           70           75           80
Met Gln His Glu Ile Met Lys Asn Val His Ser Cys Glu Leu Thr Leu

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Leu	Ala	Glu	Lys	Leu	Leu	Ala	Asp	Asn	Ile	Val	Pro	Phe	Phe	Pro	Glu	
			580					585					590			
Thr	Leu	Thr	Lys	Tyr	Gly	Asp	Leu	Asp	Leu	Gln	Arg	Ile	Met	Glu	Ile	
		595					600					605				
Lys	Ser	Glu	Leu	Ser	Ser	Ile	Lys	Thr	Arg	Arg	Asn	Asp	Ser	Tyr	Asn	
	610					615					620					
Asn	Tyr	Ile	Ala	Arg	Ala	Ser	Ile	Val	Thr	Asp	Leu	Ser	Lys	Phe	Asn	
625					630					635					640	
Gln	Ala	Phe	Arg	Tyr	Glu	Thr	Thr	Ala	Ile	Cys	Ala	Asp	Val	Ala	Asp	
				645					650					655		
Glu	Leu	His	Gly	Thr	Gln	Ser	Leu	Phe	Cys	Trp	Leu	His	Leu	Ile	Val	
			660					665					670			
Pro	Met	Thr	Thr	Met	Ile	Cys	Ala	Tyr	Arg	His	Ala	Pro	Pro	Glu	Thr	
		675					680					685				
Lys	Gly	Glu	Tyr	Asp	Ile	Asp	Lys	Ile	Glu	Glu	Gln	Ser	Gly	Leu	Tyr	
	690					695					700					
Arg	Tyr	His	Met	Gly	Gly	Ile	Glu	Gly	Trp	Cys	Gln	Lys	Leu	Trp	Thr	
705					710					715					720	
Met	Glu	Ala	Ile	Ser	Leu	Leu	Asp	Val	Val	Ser	Val	Lys	Thr	Arg	Cys	
				725					730					735		
Gln	Met	Thr	Ser	Leu	Leu	Asn	Gly	Asp	Asn	Gln	Ser	Ile	Asp	Val	Ser	
			740					745					750			
Lys	Pro	Val	Lys	Leu	Ser	Glu	Gly	Leu	Asp	Glu	Val	Lys	Ala	Asp	Tyr	
		755					760					765				
Ser	Leu	Ala	Val	Lys	Met	Leu	Lys	Glu	Ile	Arg	Asp	Ala	Tyr	Arg	Asn	
	770					775					780					
Ile	Gly	His	Lys	Leu	Lys	Glu	Gly	Glu	Thr	Tyr	Ile	Ser	Arg	Asp	Leu	
785					790					795					800	
Gln	Phe	Ile	Ser	Lys	Val	Ile	Gln	Ser	Glu	Gly	Val	Met	His	Pro	Thr	
				805					810					815		
Pro	Ile	Lys	Lys	Ile	Leu	Arg	Val	Gly	Pro	Trp	Ile	Asn	Thr	Ile	Leu	
			820					825					830			
Asp	Asp	Ile	Lys	Thr	Ser	Ala	Glu	Ser	Ile	Gly	Ser	Leu	Cys	Gln	Glu	
		835					840					845				
Leu	Glu	Phe	Arg	Gly	Glu	Ser	Ile	Ile	Val	Ser	Leu	Ile	Leu	Arg	Asn	
	850					855					860					
Phe	Trp	Leu	Tyr	Asn	Leu	Tyr	Met	His	Glu	Ser	Lys	Gln	His	Pro	Leu	
865					870					875					880	
Ala	Gly	Lys	Gln	Leu	Phe	Lys	Gln	Leu	Asn	Lys	Thr	Leu	Thr	Ser	Val	
				885					890					895		
Gln	Arg	Phe	Phe	Glu	Ile	Lys	Lys	Glu	Asn	Glu	Val	Val	Asp	Leu	Trp	
		900						905					910			
Met	Asn	Ile	Pro	Met	Gln	Phe	Gly	Gly	Gly	Asp	Pro	Val	Val	Phe	Tyr	
	915						920					925				
Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	Ile	Ser	
	930					935					940					
His	Val	Asp	Ile	Leu	Leu	Arg	Ile	Ser	Ala	Asn	Ile	Arg	Asn	Glu	Ala	
945					950					955					960	
Lys	Ile	Ser	Phe	Phe	Lys	Ala	Leu	Leu	Ser	Ile	Glu	Lys	Asn	Glu	Arg	
			965						970					975		
Ala	Thr	Leu	Thr	Thr	Leu	Met	Arg	Asp	Pro	Gln	Ala	Val	Gly	Ser	Glu	
		980						985					990			
Arg	Gln	Ala	Lys	Val	Thr	Ser	Asp	Ile	Asn	Arg	Thr	Ala	Val	Thr	Ser	
		995					1000					1005				
Ile	Leu	Ser	Leu	Ser	Pro	Asn	Gln	Leu	Phe	Ser	Asp	Ser	Ala	Ile	His	
	1010					1015					1020					
Tyr	Ser	Arg	Asn	Glu	Glu	Glu	Val	Gly	Ile	Ile	Ala	Asp	Asn	Ile	Thr	
1025					1030					1035					1040	
Pro	Val	Tyr	Pro	His	Gly	Leu	Arg	Val	Leu	Tyr	Glu	Ser	Leu	Pro	Phe	
				1045					1050					1055		
His	Lys	Ala	Glu	Lys	Val	Val	Asn	Met	Ile	Ser	Gly	Thr	Lys	Ser	Ile	

1060	1065	1070
Thr Asn Leu Leu Gln Arg Thr Ser Ala Ile Asn Gly Glu Asp Ile Asp		
1075	1080	1085
Arg Ala Val Ser Met Met Leu Glu Asn Leu Gly Leu Leu Ser Arg Ile		
1090	1095	1100
Leu Ser Val Val Val Asp Ser Ile Glu Ile Pro Thr Lys Ser Asn Gly		
1105	1110	1115
Arg Leu Ile Cys Cys Gln Ile Ser Arg Thr Leu Arg Glu Thr Ser Trp		
1125	1130	1135
Asn Asn Met Glu Ile Val Gly Val Thr Ser Pro Ser Ile Thr Thr Cys		
1140	1145	1150
Met Asp Val Ile Tyr Ala Thr Ser Ser His Leu Lys Gly Ile Ile Ile		
1155	1160	1165
Glu Lys Phe Ser Thr Asp Arg Thr Thr Arg Gly Gln Arg Gly Pro Lys		
1170	1175	1180
Ser Pro Trp Val Gly Ser Ser Thr Gln Glu Lys Lys Leu Val Pro Val		
1185	1190	1195
Tyr Asn Arg Gln Ile Leu Ser Lys Gln Gln Arg Glu Gln Leu Glu Ala		
1205	1210	1215
Ile Gly Lys Met Arg Trp Val Tyr Lys Gly Thr Pro Gly Leu Arg Arg		
1220	1225	1230
Leu Leu Asn Lys Ile Cys Leu Gly Ser Leu Gly Ile Ser Tyr Lys Cys		
1235	1240	1245
Val Lys Pro Leu Leu Pro Arg Phe Met Ser Val Asn Phe Leu His Arg		
1250	1255	1260
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala		
1265	1270	1275
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala		
1285	1290	1295
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn		
1300	1305	1310
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr		
1315	1320	1325
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Glu Ile		
1330	1335	1340
Asp Ile Met Pro Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu		
1345	1350	1355
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile		
1365	1370	1375
Asp Met Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln		
1380	1385	1390
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn		
1395	1400	1405
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly		
1410	1415	1420
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Lys Lys Asp Trp		
1425	1430	1435
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Ile Phe		
1445	1450	1455
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly		
1460	1465	1470
Lys Asn Ile Lys Asp Glu Asp Ile Val Asp Glu Ser Ile Asp Lys Leu		
1475	1480	1485
Leu Arg Ile Asp Asn Thr Phe Trp Arg Met Phe Ser Lys Val Met Phe		
1490	1495	1500
Glu Ser Lys Val Lys Lys Arg Ile Met Leu Tyr Asp Val Lys Phe Leu		
1505	1510	1515
Ser Leu Val Gly Tyr Ile Gly Phe Lys Asn Trp Phe Ile Glu Gln Leu		
1525	1530	1535
Arg Ser Ala Glu Leu His Glu Val Pro Trp Ile Val Asn Ala Glu Gly		
1540	1545	1550

Asp Leu Val Glu Ile Lys Ser Ile Lys Ile Tyr Leu Gln Leu Ile Glu
 1555 1560 1565
 Gln Ser Leu Phe Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala
 1570 1575 1580
 His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala
 1585 1590 1595 1600
 Leu Leu Thr Pro Ile Pro Ser Pro Met Val Asn Leu Thr Gln Val Ile
 1605 1610 1615
 Asp Pro Thr Glu Gln Leu Ala Tyr Phe Pro Lys Ile Thr Phe Glu Arg
 1620 1625 1630
 Leu Lys Asn Tyr Asp Thr Ser Ser Asn Tyr Ala Lys Gly Lys Leu Thr
 1635 1640 1645
 Arg Asn Tyr Met Ile Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn
 1650 1655 1660
 Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile
 1665 1670 1675 1680
 Gly Lys Leu Met Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly
 1685 1690 1695
 Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp
 1700 1705 1710
 Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr
 1715 1720 1725
 Pro Leu Glu Tyr Gln Arg Val Ile Gly Glu Leu Ser Arg Ile Ile Asp
 1730 1735 1740
 Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
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 His Trp Asp Leu Ile His Arg Val Ser Lys Asp Ala Leu Leu Ile Thr
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tgtactttat tggagaaggg gcaggaaatt ggatggccag aacagcatgt gaatatcctg 12300
acatcaaatt tgtatacaga agttttaaag atgaccttga tcatcattat ctttggaat 12360
accagagagt tataggagaa ttaagcagga taatagatag cgggtgaagg ctttcaatgg 12420
aaacaacaga tgcaactcaa aaaactcatt gggatttgat acacagagta agcaaagatg 12480
ctttattaat aactttatgt gatgcagaat ttaaggacag agatgatttt ttaagatgg 12540
taattctatg gaggaacat gtattatcat gcagaatttg cactacttat gggacagacc 12600
tctattttat cgcaaagtat catgctaaag actgcaatgt aaaattacct ttttttgtga 12660
gatcagtagc cacctttatt atgcaaggta gtaaactgtc aggctcagaa tgctacatac 12720
tcttaacact aggccaccac aacaattttac cctgccatgg agaaatacaa aattctaaga 12780
tgaaaatagc agtgtgtaat gattttttat ctgcaaaaaa acttgacaat aaatctattg 12840
aagccaactg taaatcactt ttatcagggc taagaatacc gataaataag aaagaattaa 12900
atagacagag aaggttatta acactacaaa gcaaccattc ttctgtagca acagttggag 12960
gtagcaaggc catagagtct aaatgggtta caaacaaggc aaacacaata attgattgg 13020
tagaacatat tttaaattct ccaaaagggt aattaaatta tgattttttt gaagcattag 13080
aaaatactta ccctaatatg attaaactaa tagataatct agggatgca gagataaaaa 13140
aactgatcaa agtaactgga tatatgcttg taagtaaaaa atgaaaaatg ataaaaatga 13200
taaaataggt gacaacttca tactattcca aagtaatcat ttgattatgc aattatgtaa 13260
tagttaatta aaaactaaaa atcaaaagtt agaaactaac aactgtcatt aagtttatta 13320
aaaataagaa attataattg gatgtatacg 13350

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<210> 407

<211> 568

<212> PRT

<213> Human parainfluenza 1 virus (strain CI-5/73)

<220>

<223> RNA polymerase alpha subunit (Nucleocapsid phosphoprotein) of
Human parainfluenza 1 virus

<400> 407

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Met Asp Gln Asp Ala Phe Phe Ser Glu Arg Asp Pro Glu Ala Glu Gly
 1             5             10             15
Glu Thr Pro Arg Lys Gln Glu Ser Leu Ser Asp Val Ile Gly Leu Leu

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Ser Thr Glu Lys His Thr Leu His Ser Leu Lys Leu Val Ile Glu Asn
515 520 525
Ser Pro Leu Ser Arg Val Glu Lys Lys Ala Tyr Ile Lys Ser Leu Tyr
530 535 540
Lys Cys Arg Thr Asn Gln Glu Val Lys Asn Val Met Glu Leu Phe Glu
545 550 555 560
Glu Asp Ile Asp Ser Leu Thr Asn
565

<210> 408

<211> 2223

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> L polymerase protein of Human parainfluenza 1 virus

<400> 408

Met Asp Lys Gln Glu Ser Thr Gln Asn Ser Ser Asp Ile Leu Tyr Pro
1 5 10 15
Glu Cys His Leu Asn Ser Pro Ile Val Lys Ser Lys Ile Ala Gln Leu
20 25 30
His Val Leu Leu Asp Ile Asn Gln Pro Tyr Asp Leu Lys Asp Asn Ser
35 40 45
Ile Ile Asn Ile Thr Lys Tyr Lys Ile Arg Asn Gly Gly Leu Ser Pro
50 55 60
Arg Gln Ile Lys Ile Arg Ser Leu Gly Lys Ile Leu Lys Gln Glu Ile
65 70 75 80
Lys Asp Ile Asp Arg Tyr Thr Phe Glu Pro Tyr Pro Ile Phe Ser Leu
85 90 95
Glu Leu Leu Arg Leu Asp Ile Pro Glu Ile Cys Asp Lys Ile Arg Ser
100 105 110
Ile Phe Ser Val Ser Asp Arg Leu Ile Arg Glu Leu Ser Ser Gly Phe
115 120 125
Gln Glu Leu Trp Leu Asn Ile Leu Arg Gln Leu Gly Cys Val Glu Gly
130 135 140
Lys Glu Gly Phe Asp Ser Leu Lys Asp Val Asp Ile Ile Pro Asp Ile
145 150 155 160
Thr Asp Lys Tyr Asn Lys Asn Thr Trp Tyr Arg Pro Phe Leu Thr Trp
165 170 175
Phe Ser Ile Lys Tyr Asp Met Arg Trp Met Gln Lys Asn Lys Ser Gly
180 185 190
Asn His Leu Asp Val Ser Asn Ser His Asn Phe Leu Asp Cys Lys Ser
195 200 205
Tyr Ile Leu Ile Ile Tyr Arg Asp Leu Val Ile Ile Ile Asn Lys Leu
210 215 220
Lys Leu Thr Gly Tyr Val Leu Thr Pro Glu Leu Val Leu Met Tyr Cys
225 230 235 240
Asp Val Val Glu Gly Arg Trp Asn Met Ser Ser Ala Gly Arg Leu Asp
245 250 255
Lys Arg Ser Ser Lys Ile Thr Cys Lys Gly Glu Glu Leu Trp Glu Leu
260 265 270
Ile Asp Ser Leu Phe Pro Asn Leu Gly Glu Asp Val Tyr Asn Ile Ile
275 280 285
Ser Leu Leu Glu Pro Leu Ser Leu Ala Leu Ile Gln Leu Asp Asp Pro
290 295 300
Val Thr Asn Leu Lys Gly Ala Phe Met Arg His Val Leu Thr Glu Leu
305 310 315 320
His Thr Ile Leu Ile Lys Asp Asn Ile Tyr Thr Asp Ser Glu Ala Asp
325 330 335
Ser Ile Met Glu Ser Leu Ile Lys Ile Phe Arg Glu Thr Ser Ile Asp

Ser	Lys	Arg	Ile	Tyr	Tyr	Asp	Gly	Lys	Ile	Leu	Pro	Gln	Cys	Leu	Lys	835	840	845
Ala	Leu	Thr	Arg	Cys	Val	Phe	Trp	Ser	Glu	Thr	Leu	Val	Asp	Glu	Asn	850	855	860
Arg	Ser	Ala	Cys	Ser	Asn	Ile	Ala	Thr	Ser	Ile	Ala	Lys	Ala	Ile	Glu	865	870	875
Asn	Gly	Tyr	Ser	Pro	Ile	Leu	Gly	Tyr	Cys	Ile	Ala	Leu	Phe	Lys	Thr	885	890	895
Cys	Gln	Gln	Val	Cys	Ile	Ser	Leu	Gly	Met	Thr	Ile	Asn	Pro	Thr	Ile	900	905	910
Thr	Ser	Thr	Ile	Lys	Asp	Gln	Tyr	Phe	Lys	Gly	Lys	Asn	Trp	Leu	Arg	915	920	925
Cys	Ala	Ile	Leu	Ile	Pro	Ala	Asn	Ile	Gly	Gly	Phe	Asn	Tyr	Met	Ser	930	935	940
Thr	Ala	Arg	Cys	Phe	Val	Arg	Asn	Ile	Gly	Asp	Pro	Ala	Val	Ala	Ala	945	950	955
Leu	Ala	Asp	Leu	Lys	Arg	Phe	Ile	Lys	Ala	Gly	Leu	Leu	Asp	Lys	Gln	965	970	975
Val	Leu	Tyr	Arg	Val	Met	Asn	Gln	Glu	Pro	Gly	Asp	Ser	Ser	Phe	Leu	980	985	990
Asp	Trp	Ala	Ser	Asp	Pro	Tyr	Ser	Cys	Asn	Leu	Pro	His	Ser	Gln	Ser	995	1000	1005
Ile	Thr	Thr	Ile	Ile	Lys	Asn	Val	Thr	Ala	Arg	Ser	Val	Leu	Gln	Glu	1010	1015	1020
Ser	Pro	Asn	Pro	Leu	Leu	Ser	Gly	Leu	Phe	Ser	Glu	Ser	Ser	Ser	Glu	1025	1030	1035
Glu	Asp	Leu	Asn	Leu	Ala	Ser	Phe	Leu	Met	Asp	Arg	Lys	Ala	Ile	Leu	1045	1050	1055
Pro	Arg	Val	Ala	His	Glu	Ile	Leu	Asp	Asn	Ser	Leu	Thr	Gly	Val	Arg	1060	1065	1070
Glu	Ala	Ile	Ala	Gly	Met	Leu	Asp	Thr	Thr	Lys	Ser	Leu	Val	Arg	Ala	1075	1080	1085
Ser	Val	Arg	Arg	Gly	Gly	Leu	Ser	Tyr	Ser	Ile	Leu	Arg	Arg	Leu	Ile	1090	1095	1100
Asn	Tyr	Asp	Leu	Leu	Gln	Tyr	Glu	Thr	Leu	Thr	Arg	Thr	Leu	Arg	Lys	1105	1110	1115
Pro	Val	Lys	Asp	Asn	Ile	Glu	Tyr	Glu	Tyr	Met	Cys	Ser	Val	Glu	Leu	1125	1130	1135
Ala	Ile	Gly	Leu	Arg	Gln	Lys	Met	Trp	Phe	His	Leu	Thr	Tyr	Gly	Arg	1140	1145	1150
Pro	Ile	His	Gly	Leu	Glu	Thr	Pro	Asp	Pro	Leu	Glu	Leu	Leu	Arg	Gly	1155	1160	1165
Ser	Phe	Ile	Glu	Gly	Ser	Glu	Ile	Cys	Lys	Phe	Cys	Arg	Ser	Glu	Gly	1170	1175	1180
Asn	Asn	Pro	Met	Tyr	Thr	Trp	Phe	Tyr	Leu	Pro	Asp	Asn	Ile	Asp	Leu	1185	1190	1195
Asp	Thr	Leu	Ser	Asn	Gly	Ser	Pro	Ala	Ile	Arg	Ile	Pro	Tyr	Phe	Gly	1205	1210	1215
Ser	Ala	Thr	Asp	Glu	Arg	Ser	Glu	Ala	Gln	Leu	Gly	Tyr	Val	Lys	Asn	1220	1225	1230
Leu	Ser	Lys	Pro	Ala	Lys	Ala	Ala	Ile	Arg	Ile	Ala	Met	Val	Tyr	Thr	1235	1240	1245
Trp	Ala	Tyr	Gly	Thr	Asp	Glu	Ile	Ser	Trp	Met	Glu	Ala	Ala	Leu	Ile	1250	1255	1260
Ala	Gln	Thr	Arg	Ala	Asn	Leu	Ser	Leu	Glu	Asn	Leu	Lys	Leu	Leu	Thr	1265	1270	1275
Pro	Val	Ser	Thr	Ser	Thr	Asn	Leu	Ser	His	Arg	Leu	Arg	Asp	Thr	Ala	1285	1290	1295
Thr	Gln	Met	Lys	Phe	Ser	Ser	Ala	Thr	Leu	Val	Arg	Ala	Ser	Arg	Phe	1300	1305	1310
Ile	Thr	Ile	Ser	Asn	Asp	Asn	Met	Ala	Leu	Lys	Glu	Ala	Gly	Glu	Ser			

1315	1320	1325
Lys Asp Thr Asn Leu Val Tyr Gln Gln Ile Met Leu Thr Gly Leu Ser		
1330	1335	1340
Leu Phe Glu Phe Asn Met Arg Tyr Lys Gln Gly Ser Leu Ser Lys Pro		
1345	1350	1355
Met Ile Leu His Leu His Leu Asn Asn Lys Cys Cys Ile Ile Glu Ser		1360
1365	1370	1375
Pro Gln Glu Leu Asn Ile Pro Pro Arg Ser Thr Leu Asp Leu Glu Ile		
1380	1385	1390
Thr Gln Glu Asn Asn Lys Leu Ile Tyr Asp Pro Asp Pro Leu Lys Asp		
1395	1400	1405
Ile Asp Leu Glu Leu Phe Ser Lys Val Arg Asp Val Val His Thr Ile		
1410	1415	1420
Asp Met Asn Tyr Trp Ser Asp Asp Glu Ile Ile Arg Ala Thr Ser Ile		
1425	1430	1435
Cys Thr Ala Met Thr Ile Ala Asp Thr Met Ser Gln Leu Asp Arg Asp		1440
1445	1450	1455
Asn Leu Lys Glu Met Ile Ala Leu Ile Asn Asp Asp Asp Ile Asn Ser		
1460	1465	1470
Leu Ile Thr Glu Phe Met Val Ile Asp Ile Pro Leu Phe Cys Ser Thr		
1475	1480	1485
Phe Gly Gly Ile Leu Ile Asn Gln Phe Ala Tyr Ser Leu Tyr Gly Leu		
1490	1495	1500
Asn Val Arg Gly Arg Asp Glu Ile Trp Gly Tyr Val Ile Arg Ile Ile		
1505	1510	1515
Lys Asp Thr Ser His Ala Val Leu Lys Val Leu Ser Asn Ala Leu Ser		1520
1525	1530	1535
His Pro Lys Ile Phe Lys Arg Phe Trp Asp Ala Gly Val Val Glu Pro		
1540	1545	1550
Val Tyr Gly Pro Asn Leu Ser Asn Gln Asp Lys Ile Leu Leu Ala Ile		
1555	1560	1565
Ser Val Cys Glu Tyr Ser Val Asp Leu Phe Met Arg Asp Trp Gln Glu		
1570	1575	1580
Gly Ile Pro Leu Glu Ile Phe Ile Cys Asp Asn Asp Pro Asn Ile Ala		
1585	1590	1595
Glu Met Arg Lys Leu Ser Phe Leu Ala Arg His Leu Ala Tyr Leu Cys		1600
1605	1610	1615
Ser Leu Ala Glu Ile Ala Lys Glu Gly Pro Lys Leu Glu Ser Met Thr		
1620	1625	1630
Ser Leu Glu Arg Leu Glu Ser Leu Lys Glu Tyr Leu Glu Leu Thr Phe		
1635	1640	1645
Leu Asp Asp Pro Ile Leu Arg Tyr Ser Gln Leu Thr Gly Leu Val Ile		
1650	1655	1660
Lys Ile Phe Pro Ser Thr Leu Thr Tyr Ile Arg Lys Ser Ser Ile Lys		
1665	1670	1675
Val Leu Arg Val Arg Gly Ile Gly Ile Pro Glu Val Leu Glu Asp Trp		1680
1685	1690	1695
Asp Pro Asp Ala Asp Ser Met Leu Leu Asp Asn Ile Thr Ala Glu Val		
1700	1705	1710
Gln His Asn Ile Pro Leu Lys Lys Asn Glu Arg Thr Pro Phe Trp Gly		
1715	1720	1725
Leu Arg Val Ser Lys Ser Gln Val Leu Arg Leu Arg Gly Tyr Glu Glu		
1730	1735	1740
Ile Lys Arg Glu Glu Arg Gly Arg Ser Gly Val Gly Leu Thr Leu Pro		
1745	1750	1755
Phe Asp Gly Arg Tyr Leu Ser His Gln Leu Arg Leu Phe Gly Ile Asn		1760
1765	1770	1775
Ser Thr Ser Cys Leu Lys Ala Leu Glu Leu Thr Tyr Leu Leu Asn Pro		
1780	1785	1790
Leu Val Asn Lys Asp Lys Asp Arg Leu Tyr Leu Gly Glu Gly Ala Gly		
1795	1800	1805

Ala	Met	Leu	Ser	Cys	Tyr	Asp	Ala	Thr	Leu	Gly	Pro	Cys	Met	Asn	Tyr	1810	1815	1820
Tyr	Asn	Ser	Gly	Val	Asn	Ser	Cys	Asp	Leu	Asn	Gly	Gln	Arg	Glu	Leu	1825	1830	1835
Asn	Ile	Tyr	Pro	Ser	Glu	Val	Ala	Leu	Val	Gly	Lys	Lys	Leu	Asn	Asn	1845	1850	1855
Val	Thr	Ser	Leu	Cys	Gln	Arg	Val	Lys	Val	Leu	Phe	Asn	Gly	Asn	Pro	1860	1865	1870
Gly	Ser	Thr	Trp	Ile	Gly	Asn	Asp	Glu	Cys	Glu	Thr	Leu	Ile	Trp	Asn	1875	1880	1885
Glu	Leu	Gln	Asn	Asn	Ser	Ile	Gly	Phe	Ile	His	Cys	Asp	Met	Glu	Gly	1890	1895	1900
Gly	Glu	His	Lys	Cys	Asp	Gln	Val	Val	Leu	His	Glu	His	Tyr	Ser	Val	1905	1910	1915
Ile	Arg	Ile	Ala	Tyr	Leu	Val	Gly	Asp	Lys	Asp	Val	Ile	Leu	Val	Ser	1925	1930	1935
Lys	Ile	Ala	Pro	Arg	Leu	Gly	Thr	Asp	Trp	Thr	Lys	Gln	Leu	Ser	Leu	1940	1945	1950
Tyr	Leu	Arg	Tyr	Trp	Arg	Asp	Val	Ser	Leu	Ile	Val	Leu	Lys	Thr	Ser	1955	1960	1965
Asn	Pro	Ala	Ser	Thr	Glu	Met	Tyr	Leu	Ile	Ser	Lys	Asp	Pro	Lys	Ser	1970	1975	1980
Asp	Ile	Ile	Glu	Asp	Ser	Asn	Thr	Val	Leu	Ala	Asn	Leu	Leu	Pro	Leu	1985	1990	1995
Ser	Lys	Glu	Asp	Ser	Ile	Lys	Ile	Glu	Lys	Trp	Ile	Leu	Val	Glu	Lys	2005	2010	2015
Ala	Lys	Val	His	Asp	Trp	Ile	Val	Arg	Glu	Leu	Lys	Glu	Gly	Ser	Ala	2020	2025	2030
Ser	Ser	Gly	Met	Leu	Arg	Pro	Tyr	His	Gln	Ala	Leu	Gln	Ile	Phe	Gly	2035	2040	2045
Phe	Glu	Pro	Asn	Leu	Asn	Lys	Leu	Cys	Arg	Asp	Phe	Leu	Ser	Thr	Leu	2050	2055	2060
Asn	Ile	Val	Asp	Thr	Lys	Asn	Cys	Ile	Ile	Thr	Phe	Asp	Arg	Val	Leu	2065	2070	2075
Arg	Asp	Thr	Ile	Phe	Glu	Trp	Thr	Arg	Ile	Lys	Asp	Ala	Asp	Lys	Lys	2085	2090	2095
Leu	Arg	Leu	Thr	Gly	Lys	Tyr	Asp	Leu	Tyr	Pro	Leu	Arg	Asp	Ser	Gly	2100	2105	2110
Lys	Leu	Lys	Val	Ile	Ser	Arg	Arg	Leu	Val	Ile	Ser	Trp	Ile	Ala	Leu	2115	2120	2125
Ser	Met	Ser	Thr	Arg	Leu	Val	Thr	Gly	Ser	Phe	Pro	Asp	Ile	Lys	Phe	2130	2135	2140
Glu	Ser	Arg	Leu	Gln	Leu	Gly	Ile	Val	Ser	Ile	Ser	Ser	Arg	Glu	Ile	2145	2150	2155
Lys	Asn	Leu	Arg	Val	Ile	Ser	Lys	Ile	Val	Ile	Asp	Lys	Phe	Glu	Asp	2165	2170	2175
Ile	Ile	His	Ser	Val	Thr	Tyr	Arg	Phe	Leu	Thr	Lys	Glu	Ile	Lys	Ile	2180	2185	2190
Leu	Met	Lys	Ile	Leu	Gly	Ala	Val	Lys	Leu	Phe	Gly	Ala	Arg	Gln	Ser	2195	2200	2205
Thr	Ser	Ala	Asp	Ile	Thr	Asn	Ile	Asp	Thr	Ser	Asp	Ser	Ile	Gln		2210	2215	2220

<210> 409

<211> 575

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> HN glycoprotein of Human parainfluenza 1 virus

<400> 409

Met	Ala	Glu	Lys	Gly	Lys	Thr	Asn	Ser	Ser	Tyr	Trp	Ser	Thr	Thr	Arg
1				5					10					15	
Asn	Asp	Asn	Ser	Thr	Val	Asn	Thr	His	Ile	Asn	Thr	Pro	Ala	Gly	Arg
			20					25					30		
Thr	His	Ile	Trp	Leu	Leu	Ile	Ala	Thr	Thr	Met	His	Thr	Val	Leu	Ser
		35					40					45			
Phe	Ile	Ile	Met	Ile	Leu	Cys	Ile	Asp	Leu	Ile	Ile	Lys	Gln	Asp	Thr
	50					55					60				
Cys	Met	Lys	Thr	Asn	Ile	Met	Thr	Val	Ser	Ser	Met	Asn	Glu	Ser	Ala
65					70					75					80
Lys	Ile	Ile	Lys	Glu	Thr	Ile	Thr	Glu	Leu	Ile	Arg	Gln	Glu	Val	Ile
				85					90					95	
Ser	Arg	Thr	Ile	Asn	Ile	Gln	Ser	Ser	Val	Gln	Ser	Gly	Ile	Pro	Ile
			100					105					110		
Leu	Leu	Asn	Lys	Gln	Ser	Arg	Asp	Leu	Thr	Gln	Leu	Ile	Glu	Lys	Ser
		115					120					125			
Cys	Asn	Arg	Gln	Glu	Leu	Ala	Gln	Ile	Cys	Glu	Asn	Thr	Ile	Ala	Ile
	130					135						140			
His	His	Ala	Asp	Gly	Ile	Ser	Pro	Leu	Asp	Pro	His	Asp	Phe	Trp	Arg
145					150					155					160
Cys	Pro	Val	Gly	Glu	Pro	Leu	Leu	Ser	Asn	Asn	Pro	Asn	Ile	Ser	Leu
				165					170					175	
Leu	Pro	Gly	Pro	Ser	Leu	Leu	Ser	Gly	Ser	Thr	Thr	Ile	Ser	Gly	Cys
			180					185					190		
Val	Arg	Leu	Pro	Ser	Leu	Ser	Ile	Gly	Asp	Ala	Ile	Tyr	Ala	Tyr	Ser
		195					200					205			
Ser	Asn	Leu	Ile	Thr	Gln	Gly	Cys	Ala	Asp	Ile	Gly	Lys	Ser	Tyr	Gln
	210					215						220			
Val	Leu	Gln	Leu	Gly	Tyr	Ile	Ser	Leu	Asn	Ser	Asp	Met	Tyr	Pro	Asp
225					230					235					240
Leu	Asn	Pro	Val	Ile	Ser	His	Thr	Tyr	Asp	Ile	Asn	Asp	Asn	Arg	Lys
				245					250					255	
Ser	Cys	Ser	Val	Ile	Ala	Ala	Gly	Thr	Arg	Gly	Tyr	Gln	Leu	Cys	Ser
			260					265					270		
Leu	Pro	Thr	Val	Asn	Glu	Thr	Thr	Asp	Tyr	Ser	Ser	Glu	Gly	Ile	Glu
		275					280						285		
Asp	Leu	Val	Phe	Asp	Ile	Leu	Asp	Leu	Lys	Gly	Lys	Thr	Lys	Ser	His
	290					295					300				
Arg	Tyr	Lys	Asn	Glu	Asp	Ile	Thr	Phe	Asp	His	Pro	Phe	Ser	Ala	Met
305					310					315					320
Tyr	Pro	Ser	Val	Gly	Ser	Gly	Ile	Lys	Ile	Glu	Asn	Thr	Leu	Ile	Phe
				325					330					335	
Leu	Gly	Tyr	Gly	Gly	Leu	Thr	Thr	Pro	Leu	Gln	Gly	Asp	Thr	Lys	Cys
			340					345					350		
Val	Ile	Asn	Arg	Cys	Thr	Asn	Val	Asn	Gln	Ser	Val	Cys	Asn	Asp	Ala
		355					360					365			
Leu	Lys	Ile	Thr	Trp	Leu	Lys	Lys	Arg	Gln	Val	Val	Asn	Val	Leu	Ile
	370					375					380				
Arg	Ile	Asn	Asn	Tyr	Leu	Ser	Asp	Arg	Pro	Lys	Ile	Val	Val	Glu	Thr
385					390					395					400
Ile	Pro	Ile	Thr	Gln	Asn	Tyr	Leu	Gly	Ala	Glu	Gly	Arg	Leu	Leu	Lys
				405					410					415	
Leu	Gly	Lys	Lys	Ile	Tyr	Ile	Tyr	Thr	Arg	Ser	Ser	Gly	Trp	His	Ser
			420					425					430		
Asn	Leu	Gln	Ile	Gly	Ser	Leu	Asp	Ile	Asn	Asn	Pro	Met	Thr	Ile	Lys
		435					440					445			
Trp	Ala	Pro	His	Glu	Val	Leu	Ser	Arg	Pro	Gly	Asn	Gln	Asp	Cys	Asn
	450					455					460				
Trp	Tyr	Asn	Arg	Cys	Pro	Arg	Glu	Cys	Ile	Ser	Gly	Val	Tyr	Thr	Asp

465					470					475					480
Ala	Tyr	Pro	Leu	Ser	Pro	Asp	Ala	Val	Asn	Val	Ala	Thr	Thr	Thr	Leu
				485					490					495	
Tyr	Ala	Asn	Thr	Ser	Arg	Val	Asn	Pro	Thr	Ile	Met	Tyr	Ser	Asn	Thr
			500					505					510		
Ser	Glu	Ile	Ile	Asn	Met	Leu	Arg	Leu	Lys	Asn	Val	Gln	Leu	Glu	Ala
		515				520					525				
Ala	Tyr	Thr	Thr	Thr	Ser	Cys	Ile	Thr	His	Phe	Gly	Lys	Gly	Tyr	Cys
	530				535					540					
Phe	His	Ile	Val	Glu	Ile	Asn	Gln	Ala	Ser	Leu	Asn	Thr	Leu	Gln	Pro
545					550				555					560	
Met	Leu	Phe	Lys	Thr	Ser	Ile	Pro	Lys	Ile	Cys	Lys	Ile	Thr	Ser	
			565					570					575		

<210> 410

<211> 348

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> matrix protein of Human parainfluenza 1 virus

<400> 410

Met	Ala	Glu	Thr	Tyr	Arg	Phe	Pro	Arg	Phe	Ser	His	Glu	Glu	Asn	Gly
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Thr	Val	Glu	Pro	Leu	Pro	Leu	Lys	Thr	Gly	Pro	Asp	Lys	Lys	Ala	Ile
		20					25						30		
Pro	His	Ile	Arg	Ile	Val	Lys	Val	Gly	Asp	Pro	Pro	Lys	His	Gly	Val
	35					40					45				
Arg	Tyr	Leu	Asp	Val	Leu	Leu	Leu	Gly	Phe	Phe	Glu	Thr	Pro	Lys	Gln
	50				55				60						
Gly	Pro	Leu	Ser	Gly	Ser	Ile	Ser	Asp	Leu	Thr	Glu	Ser	Thr	Ser	Tyr
65				70				75						80	
Ser	Ile	Cys	Gly	Ser	Gly	Ser	Leu	Pro	Ile	Gly	Ile	Ala	Lys	Tyr	Tyr
		85				90							95		
Gly	Thr	Asp	Gln	Glu	Leu	Leu	Lys	Ala	Cys	Ile	Asp	Leu	Lys	Ile	Thr
		100					105						110		
Val	Arg	Arg	Thr	Val	Arg	Ser	Gly	Glu	Met	Ile	Val	Tyr	Met	Val	Asp
	115					120						125			
Ser	Ile	His	Ala	Pro	Leu	Leu	Pro	Trp	Ser	Ser	Arg	Leu	Arg	Gln	Gly
	130				135					140					
Met	Ile	Tyr	Asn	Ala	Asn	Lys	Val	Ala	Leu	Ala	Pro	Gln	Cys	Leu	Pro
145				150				155						160	
Val	Asp	Lys	Asp	Ile	Arg	Phe	Arg	Val	Val	Phe	Val	Asn	Gly	Thr	Ser
		165						170						175	
Leu	Gly	Thr	Ile	Thr	Ile	Ala	Lys	Val	Pro	Lys	Thr	Leu	Ala	Asp	Leu
		180					185						190		
Ala	Leu	Pro	Asn	Ser	Ile	Ser	Val	Asn	Leu	Leu	Val	Thr	Leu	Arg	Ala
	195					200					205				
Gly	Val	Ser	Thr	Glu	Gln	Lys	Gly	Ile	Leu	Pro	Val	Leu	Asp	Asp	Asp
	210				215					220					
Gly	Glu	Lys	Lys	Leu	Asn	Phe	Met	Val	His	Leu	Gly	Ile	Ile	Arg	Arg
225				230				235						240	
Lys	Val	Gly	Lys	Ile	Tyr	Ser	Val	Glu	Tyr	Cys	Lys	Asn	Lys	Ile	Glu
		245						250					255		
Lys	Met	Lys	Leu	Ile	Phe	Ser	Leu	Gly	Leu	Val	Gly	Gly	Ile	Ser	Phe
	260					265						270			
His	Val	His	Ala	Thr	Gly	Thr	Leu	Ser	Lys	Thr	Leu	Met	Ser	Gln	Leu
	275					280					285				
Ala	Trp	Lys	Lys	Ala	Val	Cys	Tyr	Pro	Leu	Met	Asp	Val	Asn	Pro	His

290		295		300
Met Asn Leu Val Ile Trp	Ala Ala Ser Val Glu Ile Thr Ser Val Asp			
305	310	315	320	
Ala Val Phe Gln Pro Ala Ile Pro Lys Glu Phe Arg Tyr Tyr Pro Asn				
	325	330	335	
Val Val Ala Lys Ser Ile Gly Lys Ile Arg Arg Ile				
	340	345		

<210> 411

<211> 181

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> Y1 protein of Human parainfluenza 1 virus

<400> 411

Met Ser Ser Asp Ser Leu Thr Ser Ser Tyr Pro Thr Ser Pro Gln Lys	
1	5 10 15
Leu Glu Lys Thr Glu Ala Gly Ser Met Val Ser Ser Thr Thr Gln Lys	
	20 25 30
Lys Thr Ser His His Ala Lys Pro Thr Ile Thr Thr Lys Thr Glu Gln	
	35 40 45
Ser Gln Arg Arg Pro Lys Ile Ile Asp Gln Val Arg Gly Val Glu Ser	
	50 55 60
Leu Gly Glu Gln Val Ser Gln Lys Gln Arg His Met Leu Glu Ser Leu	
65	70 75 80
Ile Asn Lys Val Tyr Thr Gly Pro Leu Gly Glu Glu Leu Val Gln Thr	
	85 90 95
Leu Tyr Leu Arg Ile Trp Ala Met Lys Glu Thr Pro Glu Ser Thr Lys	
	100 105 110
Ile Leu Gln Met Arg Glu Asp Ile Arg Asp Gln Tyr Leu Arg Met Lys	
	115 120 125
Thr Glu Arg Trp Leu Arg Thr Leu Ile Arg Gly Lys Lys Thr Lys Leu	
	130 135 140
Arg Asp Phe Gln Lys Arg Tyr Glu Glu Val His Pro Tyr Leu Met Met	
145	150 155 160
Glu Arg Val Glu Gln Ile Ile Met Glu Glu Ala Trp Lys Leu Ala Ala	
	165 170 175
His Ile Val Gln Glu	
	180

<210> 412

<211> 204

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> C protein of Human parainfluenza 1 virus

<400> 412

Met Pro Ser Phe Leu Arg Gly Ile Leu Lys Pro Lys Glu Arg His His	
1	5 10 15
Glu Asn Lys Asn His Ser Gln Met Ser Ser Asp Ser Leu Thr Ser Ser	
	20 25 30
Tyr Pro Thr Ser Pro Gln Lys Leu Glu Lys Thr Glu Ala Gly Ser Met	
	35 40 45
Val Ser Ser Thr Thr Gln Lys Lys Thr Ser His His Ala Lys Pro Thr	
	50 55 60
Ile Thr Thr Lys Thr Glu Gln Ser Gln Arg Arg Pro Lys Ile Ile Asp	
65	70 75 80

Gln	Val	Arg	Gly	Val	Glu	Ser	Leu	Gly	Glu	Gln	Val	Ser	Gln	Lys	Gln	
			85						90					95		
Arg	His	Met	Leu	Glu	Ser	Leu	Ile	Asn	Lys	Val	Tyr	Thr	Gly	Pro	Leu	
			100					105					110			
Gly	Glu	Glu	Leu	Val	Gln	Thr	Leu	Tyr	Leu	Arg	Ile	Trp	Ala	Met	Lys	
			115				120					125				
Glu	Thr	Pro	Glu	Ser	Thr	Lys	Ile	Leu	Gln	Met	Arg	Glu	Asp	Ile	Arg	
			130			135					140					
Asp	Gln	Tyr	Leu	Arg	Met	Lys	Thr	Glu	Arg	Trp	Leu	Arg	Thr	Leu	Ile	
145					150					155					160	
Arg	Gly	Lys	Lys	Thr	Lys	Leu	Arg	Asp	Phe	Gln	Lys	Arg	Tyr	Glu	Glu	
				165					170					175		
Val	His	Pro	Tyr	Leu	Met	Met	Glu	Arg	Val	Glu	Gln	Ile	Ile	Met	Glu	
			180					185					190			
Glu	Ala	Trp	Lys	Leu	Ala	Ala	His	Ile	Val	Gln	Glu					
			195				200									

<210> 413

<211> 568

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> phosphoprotein of Human parainfluenza 1 virus

<400> 413

Met	Asp	Gln	Asp	Ala	Phe	Phe	Phe	Glu	Arg	Asp	Pro	Glu	Ala	Glu	Gly	
1				5					10					15		
Glu	Ala	Pro	Arg	Lys	Gln	Glu	Ser	Leu	Ser	Asp	Val	Ile	Gly	Leu	Leu	
			20					25					30			
Asp	Val	Val	Leu	Ser	Tyr	Lys	Pro	Thr	Glu	Ile	Gly	Glu	Asp	Arg	Ser	
		35				40					45					
Trp	Leu	His	Gly	Ile	Ile	Asp	Asn	Pro	Lys	Glu	Asn	Lys	Pro	Ser	Cys	
50					55					60						
Lys	Ala	Asp	Asp	Asn	Asn	Lys	Asp	Arg	Ala	Ile	Ser	Thr	Ser	Thr	Gln	
65				70					75						80	
Asp	His	Arg	Ser	Ser	Glu	Gly	Ser	Gly	Ile	Ser	Arg	Arg	Thr	Ser	Glu	
				85				90						95		
Ser	Lys	Thr	Glu	Thr	His	Ala	Arg	Ile	Leu	Asp	Gln	Gln	Gly	Ile	His	
			100					105					110			
Arg	Ala	Ser	Arg	Arg	Gly	Thr	Ser	Pro	Asn	Pro	Leu	Pro	Glu	Asn	Met	
			115				120						125			
Gly	Asn	Glu	Arg	Asn	Thr	Arg	Ile	Asp	Glu	Asp	Ser	Pro	Asn	Glu	Arg	
130					135						140					
Arg	His	Gln	Arg	Ser	Val	Leu	Thr	Asp	Glu	Asp	Arg	Lys	Met	Ala	Glu	
145				150						155					160	
Asn	Ser	Asn	Lys	Arg	Glu	Glu	Asp	Gln	Val	Glu	Gly	Phe	Pro	Glu	Glu	
				165				170						175		
Val	Arg	Arg	Ser	Thr	Pro	Leu	Ser	Asp	Asp	Gly	Glu	Gly	Arg	Thr	Asn	
			180					185					190			
Asn	Asn	Gly	Arg	Ser	Met	Glu	Thr	Ser	Ser	Thr	His	Ser	Thr	Arg	Ile	
		195					200					205				
Thr	Asp	Val	Ile	Thr	Asn	Pro	Ser	Pro	Glu	Leu	Glu	Asp	Ala	Val	Leu	
	210				215						220					
Gln	Arg	Asn	Lys	Arg	Arg	Pro	Thr	Thr	Ile	Lys	Arg	Asn	Gln	Thr	Arg	
225				230						235					240	
Ser	Glu	Arg	Thr	Gln	Ser	Ser	Glu	Leu	His	Lys	Ser	Thr	Ser	Glu	Asn	
				245				250						255		
Ser	Ser	Asn	Leu	Glu	Asp	His	Asn	Thr	Lys	Thr	Ser	Pro	Lys	Val	Pro	
			260					265					270			
Pro	Ser	Lys	Asn	Glu	Glu	Ser	Ala	Ala	Thr	Pro	Lys	Asn	Asn	His	Asn	

Thr Lys Thr Asp Gly Phe Ile Val Lys Thr Arg Asp Met Glu Tyr Glu
 115 120 125
 Arg Thr Thr Glu Trp Leu Phe Gly Pro Met Ile Asn Lys Asn Pro Leu
 130 135 140
 Phe Gln Gly Gln Arg Glu Asn Ala Asp Leu Glu Ala Leu Leu Gln Thr
 145 150 155 160
 Tyr Gly Tyr Pro Ala Cys Leu Gly Ala Ile Ile Val Gln Val Trp Ile
 165 170 175
 Val Leu Val Lys Ala Ile Thr Ser Ser Ala Gly Leu Arg Lys Gly Phe
 180 185 190
 Phe Asn Arg Leu Glu Ala Phe Arg Gln Asp Gly Thr Val Lys Ser Ala
 195 200 205
 Leu Val Phe Thr Gly Asp Thr Val Glu Gly Ile Gly Ala Val Met Arg
 210 215 220
 Ser Gln Gln Ser Leu Val Ser Leu Met Val Glu Thr Leu Val Thr Met
 225 230 235 240
 Asn Thr Ser Arg Ser Asp Leu Thr Thr Leu Glu Lys Asn Ile Gln Ile
 245 250 255
 Val Gly Asn Tyr Ile Arg Asp Ala Gly Leu Ala Ser Phe Met Asn Thr
 260 265 270
 Ile Lys Tyr Gly Val Glu Thr Lys Met Ala Ala Leu Thr Leu Ser Asn
 275 280 285
 Leu Arg Pro Asp Ile Asn Lys Leu Arg Ser Leu Val Asp Ile Tyr Leu
 290 295 300
 Ser Lys Gly Ala Arg Ala Pro Phe Ile Cys Ile Leu Arg Asp Pro Val
 305 310 315 320
 His Gly Asp Phe Ala Pro Gly Asn Tyr Pro Ala Leu Trp Ser Tyr Ala
 325 330 335
 Met Gly Val Ala Val Val Gln Asn Lys Ala Met Gln Gln Tyr Val Thr
 340 345 350
 Gly Arg Thr Tyr Leu Asp Met Glu Met Phe Leu Leu Gly Gln Ala Val
 355 360 365
 Ala Lys Asp Ala Asp Ser Lys Ile Ser Ser Ala Leu Glu Glu Glu Leu
 370 375 380
 Gly Val Thr Asp Thr Ala Lys Glu Arg Leu Arg His His Leu Thr Asn
 385 390 395 400
 Leu Ser Gly Gly Asp Gly Ala Tyr His Lys Pro Thr Gly Gly Gly Ala
 405 410 415
 Ile Glu Val Ala Ile Asp His Thr Asp Ile Thr Phe Gly Val Glu Asp
 420 425 430
 Thr Ala Asp Arg Asp Asn Lys Asn Trp Thr Asn Asp Ser Asn Glu Arg
 435 440 445
 Trp Met Asn His Ser Ile Ser Asn His Thr Ile Thr Ile Arg Gly Ala
 450 455 460
 Glu Glu Leu Glu Glu Glu Thr Asn Asp Glu Asp Ile Thr Asp Ile Glu
 465 470 475 480
 Asn Lys Ile Ala Arg Arg Leu Ala Asp Arg Lys Gln Arg Leu Ser Gln
 485 490 495
 Ala Asn Asn Lys Arg Asp Thr Ser Ser Asp Ala Asp Tyr Glu Asn Asp
 500 505 510
 Asp Asp Ala Thr Ala Ala Ala Gly Ile Gly Gly Ile
 515 520

<210> 415

<211> 555

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> F glycoprotein of Human parainfluenza 1 virus

<400> 415

Met	Gln	Lys	Ser	Glu	Ile	Leu	Phe	Leu	Val	Tyr	Ser	Ser	Leu	Leu	Leu
1				5					10					15	
Ser	Ser	Ser	Leu	Cys	Gln	Ile	Pro	Val	Glu	Lys	Leu	Ser	Asn	Val	Gly
			20					25					30		
Val	Ile	Ile	Asn	Glu	Gly	Lys	Leu	Leu	Lys	Ile	Ala	Gly	Ser	Tyr	Glu
		35					40					45			
Ser	Arg	Tyr	Ile	Val	Leu	Ser	Leu	Val	Pro	Ser	Ile	Asp	Leu	Gln	Asp
		50				55					60				
Gly	Cys	Gly	Thr	Thr	Gln	Ile	Ile	Gln	Tyr	Lys	Asn	Leu	Leu	Asn	Arg
65					70					75					80
Leu	Leu	Ile	Pro	Leu	Lys	Asp	Ala	Leu	Asp	Leu	Gln	Glu	Ser	Leu	Ile
				85					90					95	
Thr	Ile	Thr	Asn	Asp	Thr	Thr	Val	Thr	Asn	Asp	Asn	Pro	Gln	Thr	Arg
			100					105					110		
Phe	Phe	Gly	Ala	Val	Ile	Gly	Thr	Ile	Ala	Leu	Gly	Val	Ala	Thr	Ala
		115					120					125			
Ala	Gln	Ile	Thr	Ala	Gly	Ile	Ala	Leu	Ala	Glu	Ala	Arg	Glu	Ala	Arg
		130				135					140				
Lys	Asp	Ile	Ala	Leu	Ile	Lys	Asp	Ser	Ile	Val	Lys	Thr	His	Asn	Ser
145					150					155					160
Val	Glu	Leu	Ile	Gln	Arg	Gly	Ile	Gly	Glu	Gln	Ile	Ile	Ala	Leu	Lys
				165					170					175	
Thr	Leu	Gln	Asp	Phe	Val	Asn	Asp	Glu	Ile	Arg	Pro	Ala	Ile	Gly	Glu
			180					185					190		
Leu	Arg	Cys	Glu	Thr	Thr	Ala	Leu	Lys	Leu	Gly	Ile	Lys	Leu	Thr	Gln
		195					200					205			
His	Tyr	Ser	Glu	Leu	Ala	Thr	Ala	Phe	Ser	Ser	Asn	Leu	Gly	Thr	Ile
	210					215					220				
Gly	Glu	Lys	Ser	Leu	Thr	Leu	Gln	Ala	Leu	Ser	Ser	Leu	Tyr	Ser	Ala
225					230					235					240
Asn	Ile	Thr	Glu	Ile	Leu	Ser	Thr	Thr	Lys	Lys	Asp	Lys	Ser	Asp	Ile
				245					250					255	
Tyr	Asp	Ile	Ile	Tyr	Thr	Glu	Gln	Val	Lys	Gly	Thr	Val	Ile	Asp	Val
		260					265						270		
Asp	Leu	Glu	Lys	Tyr	Met	Val	Thr	Leu	Leu	Val	Lys	Ile	Pro	Ile	Leu
		275					280					285			
Ser	Glu	Ile	Pro	Gly	Val	Leu	Ile	Tyr	Arg	Ala	Ser	Ser	Ile	Ser	Tyr
	290					295					300				
Asn	Ile	Glu	Gly	Glu	Glu	Trp	His	Val	Ala	Ile	Pro	Asn	Tyr	Ile	Ile
305					310					315					320
Asn	Lys	Ala	Ser	Ser	Leu	Gly	Gly	Ala	Asp	Val	Thr	Asn	Cys	Ile	Glu
				325					330					335	
Ser	Lys	Leu	Ala	Tyr	Ile	Cys	Pro	Arg	Asp	Pro	Thr	Gln	Leu	Ile	Pro
			340					345					350		
Asp	Asn	Gln	Lys	Cys	Ile	Leu	Gly	Asp	Val	Ser	Lys	Cys	Pro	Val	
		355				360						365			
Thr	Lys	Val	Ile	Asn	Asn	Leu	Val	Pro	Lys	Phe	Ala	Phe	Ile	Asn	Gly
	370					375						380			
Gly	Val	Val	Ala	Asn	Cys	Ile	Ala	Ser	Thr	Cys	Thr	Cys	Gly	Thr	Asn
385					390					395					400
Arg	Ile	Pro	Val	Asn	Gln	Asp	Arg	Ser	Arg	Gly	Val	Thr	Phe	Leu	Thr
				405					410					415	
Tyr	Thr	Asn	Cys	Gly	Leu	Ile	Gly	Ile	Asn	Gly	Ile	Glu	Leu	Tyr	Ala
		420					425						430		
Asn	Lys	Arg	Gly	Arg	Asp	Thr	Thr	Trp	Gly	Asn	Gln	Ile	Ile	Lys	Val
		435					440					445			
Gly	Pro	Ala	Val	Ser	Ile	Arg	Pro	Val	Asp	Ile	Ser	Leu	Asn	Leu	Ala
	450					455					460				
Ser	Ala	Thr	Asn	Phe	Leu	Glu	Glu	Ser	Lys	Thr	Glu	Leu	Met	Lys	Ala
465					470					475					480

Arg	Ala	Ile	Ile	Ser	Ala	Val	Gly	Gly	Trp	His	Asn	Thr	Glu	Ser	Thr
				485					490					495	
Gln	Ile	Ile	Met	Ile	Ile	Ile	Val	Cys	Ile	Leu	Ile	Ile	Ile	Ile	Cys
			500					505					510		
Gly	Ile	Leu	Tyr	Tyr	Leu	Tyr	Arg	Val	Arg	Arg	Leu	Leu	Val	Met	Ile
		515					520					525			
Asn	Ser	Thr	His	Asn	Ser	Pro	Val	Asn	Ala	Tyr	Thr	Leu	Glu	Ser	Arg
	530					535					540				
Met	Arg	Asn	Pro	Tyr	Met	Gly	Asn	Asn	Ser	Asn					
545					550					555					

<210> 416

<211> 373

<212> PRT

<213> Human parainfluenza virus 3

<220>

<223> D protein of Human parainfluenza virus 3

<400> 416

Met	Glu	Ser	Asp	Ala	Lys	Asn	Tyr	Gln	Ile	Met	Asp	Ser	Trp	Glu	Glu
1				5				10						15	
Glu	Ser	Arg	Asp	Lys	Ser	Thr	Asn	Ile	Ser	Ser	Ala	Leu	Asn	Ile	Ile
			20					25					30		
Glu	Phe	Ile	Leu	Ser	Thr	Asp	Pro	Gln	Glu	Asp	Leu	Ser	Glu	Asn	Asp
	35					40					45				
Thr	Ile	Asn	Thr	Arg	Thr	Gln	Gln	Leu	Ser	Ala	Thr	Ile	Tyr	Gln	Pro
	50				55						60				
Lys	Ile	Lys	Pro	Thr	Glu	Thr	Ser	Glu	Lys	Asp	Ser	Gly	Ser	Thr	Asp
65				70					75					80	
Lys	Asn	Arg	Gln	Ser	Gly	Ser	Ser	His	Glu	Cys	Thr	Thr	Glu	Ala	Lys
			85					90						95	
Asp	Arg	Thr	Ile	Asp	Gln	Glu	Thr	Val	Gln	Arg	Gly	Pro	Gly	Arg	Arg
			100					105					110		
Ser	Ser	Ser	Asp	Ser	Arg	Ala	Glu	Thr	Val	Val	Ser	Gly	Gly	Ile	Ser
	115					120						125			
Arg	Ser	Ile	Thr	Asn	Ser	Lys	Asn	Gly	Thr	Gln	Asn	Thr	Glu	Asp	Ile
	130				135						140				
Asp	Leu	Asn	Glu	Ile	Arg	Lys	Met	Asp	Lys	Asp	Ser	Ile	Glu	Gly	Lys
145				150					155						160
Val	Arg	Gln	Ser	Ala	Asp	Val	Pro	Ser	Glu	Ile	Ser	Gly	Ser	Asp	Val
				165					170					175	
Ile	Phe	Thr	Thr	Glu	Gln	Ser	Arg	Asn	Ser	Asp	His	Gly	Arg	Ser	Leu
			180					185					190		
Glu	Ser	Ile	Ser	Thr	Pro	Asp	Thr	Arg	Ser	Ile	Ser	Val	Val	Thr	Ala
	195					200						205			
Ala	Thr	Pro	Asp	Asp	Glu	Glu	Ile	Leu	Met	Lys	Asn	Ser	Arg	Thr	
	210					215					220				
Lys	Lys	Ser	Ser	Ser	Ile	His	Gln	Glu	Asp	Asp	Lys	Arg	Ile	Lys	Lys
225				230					235						240
Gly	Gly	Glu	Lys	Gly	Lys	Thr	Gly	Leu	Arg	Asn	Gln	Lys	Ile	Leu	Thr
				245					250					255	
Thr	Arg	Tyr	Gln	His	Gln	Thr	Thr	Asp	Pro	His	Gln	Lys	Gly	Arg	Arg
			260					265					270		
Lys	Ser	Gln	Lys	Gln	Gln	Pro	Ser	Thr	Pro	Thr	Gln	Arg	Gly	Lys	Gln
	275					280						285			
Lys	Tyr	Arg	Gln	Asn	His	Gln	Glu	His	Asn	Pro	His	His	Gly	Ile	Ser
	290					295					300				
Pro	Leu	Ile	Thr	Thr	Gln	Ile	Glu	Pro	Asn	Arg	Gln	Thr	Gln	Leu	Pro
305					310					315					320
Gln	Gln	Gln	Pro	Pro	Asp	Gln	Leu	Ile	Gln	Lys	Asn	Gln	Ser	Glu	Gln

325 330 335
 Thr Leu Asp Pro Asn Pro Arg His Lys Arg Gln Met Glu Arg Lys Gly
 340 345 350
 Arg Ile Gln Lys Arg Ala Ile Asp Leu Gln Arg Gly Gln Leu Leu Tyr
 355 360 365
 Cys Arg Ile Leu Val
 370

 <210> 417
 <211> 574
 <212> PRT
 <213> Human parainfluenza virus 3

 <220>
 <223> hemagglutinin-neuraminidase of Human parainfluenza virus 3

 <400> 417
 Met Glu Tyr Trp Lys His Thr Asn His Gly Lys Asp Ala Gly Asn Glu
 1 5 10 15
 Leu Glu Thr Ser Met Ala Thr His Asn Asn Lys Leu Thr Asn Lys Ile
 20 25 30
 Ile Tyr Ile Leu Trp Thr Ile Ile Leu Val Leu Leu Ser Ile Val Phe
 35 40 45
 Ile Ile Val Leu Ile Asn Ser Ile Asn Ser Glu Lys Val His Asn Ser
 50 55 60
 Leu Leu Gln Glu Ile Asn Asn Glu Phe Met Glu Ile Thr Glu Lys Ile
 65 70 75 80
 Gln Met Ala Ser Asp Asn Thr Asn Asp Leu Ile Gln Ser Gly Val Asn
 85 90 95
 Thr Arg Leu Leu Thr Ile Gln Ser His Val Gln Asn Tyr Ile Pro Ile
 100 105 110
 Ser Leu Thr Gln Gln Met Ser Asp Leu Arg Lys Phe Ile Ser Glu Ile
 115 120 125
 Thr Ile Arg Asn Asp Asn Gln Glu Val Pro Gln Gln Arg Ile Thr His
 130 135 140
 Asp Val Gly Ile Lys Pro Leu Asn Pro Asp Asp Phe Trp Arg Cys Thr
 145 150 155 160
 Ser Gly Leu Pro Phe Leu Met Arg Asn Pro Lys Ile Arg Leu Met Pro
 165 170 175
 Gly Pro Gly Leu Leu Ala Met Pro Thr Thr Val Asp Gly Cys Val Arg
 180 185 190
 Thr Pro Ser Leu Ile Ile Asn Asp Leu Ile Tyr Ala Tyr Thr Ser Asn
 195 200 205
 Leu Ile Thr Arg Gly Cys Gln Asp Ile Gly Lys Ser Tyr Gln Val Leu
 210 215 220
 Gln Val Gly Ile Ile Thr Val Asn Ser Asp Leu Val Pro Asp Leu Asn
 225 230 235 240
 Pro Arg Phe Ser His Thr Phe Asn Ile Asn Asp Asn Arg Lys Ser Cys
 245 250 255
 Ser Leu Ala Leu Leu Asn Thr Asp Val Tyr Gln Leu Cys Ser Thr Pro
 260 265 270
 Lys Val Asp Glu Arg Ser Asp Tyr Ala Ser Ser Gly Ile Glu Asp Ile
 275 280 285
 Val Leu Asp Ile Val Asn Tyr Asp Gly Ser Ile Ser Thr Thr Arg Phe
 290 295 300
 Lys Asn Asn Asn Ile Ser Phe Asp Gln Pro Tyr Ala Ala Leu Tyr Pro
 305 310 315 320
 Ser Val Gly Pro Gly Ile Tyr Tyr Lys Gly Lys Ile Ile Phe Leu Gly
 325 330 335
 Tyr Gly Gly Leu Glu His Pro Ile Asn Glu Asn Val Ile Cys Asn Thr
 340 345 350

Thr	Glu	Cys	Pro	Gly	Lys	Thr	Gln	Arg	Asp	Cys	Asn	Gln	Ala	Ser	Tyr
		355					360					365			
Ser	Pro	Trp	Phe	Ser	Asp	Arg	Arg	Met	Val	Asn	Ser	Ile	Ile	Val	Val
	370					375				380					
Asp	Lys	Gly	Leu	Asn	Ser	Ile	Pro	Lys	Leu	Lys	Val	Trp	Thr	Ile	Ser
385					390					395					400
Met	Arg	Gln	Asn	Tyr	Trp	Gly	Ser	Glu	Gly	Arg	Leu	Ile	Leu	Leu	Gly
			405						410						415
Asn	Lys	Ile	Tyr	Ile	Tyr	Thr	Arg	Ser	Thr	Ser	Trp	His	Ser	Lys	Leu
			420					425					430		
Gln	Leu	Gly	Ile	Ile	Asp	Ile	Thr	Asp	Tyr	Ser	Asp	Ile	Arg	Ile	Lys
		435					440					445			
Trp	Thr	Trp	His	Asn	Val	Leu	Ser	Arg	Pro	Gly	Asn	Asp	Glu	Cys	Pro
	450					455					460				
Trp	Gly	His	Ser	Cys	Pro	Asn	Gly	Cys	Ile	Thr	Gly	Val	Tyr	Thr	Asp
465					470						475				480
Ala	Tyr	Pro	Leu	Asn	Pro	Thr	Gly	Ser	Ile	Val	Ser	Ser	Val	Ile	Leu
				485					490						495
Asp	Ser	Gln	Lys	Ser	Arg	Val	Asn	Pro	Val	Ile	Thr	Tyr	Ser	Thr	Ala
			500					505					510		
Thr	Glu	Arg	Val	Asn	Glu	Leu	Ala	Ile	Arg	Asn	Arg	Thr	Leu	Ser	Ala
		515					520					525			
Gly	Tyr	Thr	Thr	Thr	Ser	Cys	Ile	Thr	His	Tyr	Asp	Lys	Gly	Tyr	Cys
	530					535					540				
Phe	His	Ile	Val	Glu	Ile	Asn	Gln	Lys	Ser	Ser	Asn	Thr	Phe	Gln	Pro
545					550					555					560
Met	Leu	Phe	Lys	Thr	Glu	Ile	Pro	Lys	Ser	Cys	Ser	Gln	Ser		
				565					570						

<210> 418

<211> 515

<212> PRT

<213> Human parainfluenza virus 3

<220>

<223> nucleocapsid protein of Human parainfluenza virus 3

<400> 418

Met	Leu	Ser	Leu	Phe	Asp	Thr	Phe	Asn	Ala	Arg	Arg	Gln	Glu	Asn	Ile
1				5					10					15	
Thr	Lys	Ser	Ala	Gly	Gly	Ala	Ile	Ile	Pro	Gly	Gln	Lys	Asn	Thr	Val
			20				25					30			
Ser	Ile	Phe	Ala	Leu	Gly	Pro	Thr	Ile	Thr	Asp	Asp	Asn	Glu	Lys	Met
	35					40						45			
Thr	Leu	Ala	Leu	Leu	Phe	Leu	Ser	His	Ser	Leu	Asp	Asn	Glu	Lys	Gln
	50					55					60				
His	Ala	Gln	Arg	Ala	Gly	Phe	Leu	Val	Ser	Leu	Leu	Ser	Met	Ala	Tyr
65					70					75					80
Ala	Asn	Pro	Glu	Leu	Tyr	Leu	Thr	Thr	Asn	Gly	Ser	Asn	Ala	Asp	Val
			85						90					95	
Lys	Tyr	Val	Ile	Tyr	Met	Ile	Glu	Lys	Asp	Leu	Lys	Arg	Gln	Lys	Tyr
		100					105						110		
Gly	Gly	Phe	Val	Val	Lys	Thr	Arg	Glu	Met	Val	Tyr	Asp	Lys	Thr	Thr
		115				120						125			
Asp	Trp	Ile	Phe	Gly	Ser	Asp	Leu	Asp	Cys	Asp	Gln	Glu	Thr	Met	Leu
	130				135						140				
Gln	Asn	Gly	Arg	Asn	Asn	Ser	Thr	Ile	Glu	Asp	Leu	Val	His	Thr	Phe
145					150					155					160
Gly	Tyr	Pro	Ser	Cys	Leu	Gly	Ala	Leu	Ile	Ile	Gln	Ile	Trp	Ile	Val
				165					170						175

Leu	Val	Lys	Ala	Ile	Thr	Ser	Ile	Ser	Gly	Leu	Arg	Lys	Gly	Phe	Phe
			180					185					190		
Thr	Arg	Leu	Glu	Ala	Phe	Arg	Gln	Asp	Gly	Thr	Val	Gln	Ala	Gly	Leu
		195					200					205			
Val	Leu	Ser	Gly	Asp	Thr	Val	Asp	Gln	Ile	Gly	Ser	Ile	Met	Arg	Ser
	210					215					220				
Gln	Gln	Ser	Leu	Val	Thr	Leu	Met	Val	Glu	Thr	Leu	Ile	Thr	Met	Asn
225					230					235					240
Thr	Ser	Arg	Asn	Asp	Leu	Thr	Thr	Ile	Glu	Lys	Asn	Ile	Gln	Ile	Val
			245						250					255	
Gly	Asn	Tyr	Ile	Arg	Asp	Ala	Gly	Leu	Ala	Ser	Phe	Phe	Asn	Thr	Ile
		260						265					270		
Arg	Tyr	Gly	Ile	Glu	Thr	Arg	Met	Ala	Ala	Leu	Thr	Leu	Ser	Thr	Leu
	275						280					285			
Arg	Pro	Asp	Ile	Asn	Arg	Leu	Lys	Ala	Leu	Met	Glu	Leu	Tyr	Leu	Ser
	290					295					300				
Lys	Gly	Pro	Arg	Ala	Pro	Phe	Ile	Cys	Ile	Leu	Arg	Asp	Pro	Ile	His
305					310						315				320
Gly	Glu	Phe	Ala	Pro	Gly	Asn	Tyr	Pro	Ala	Ile	Trp	Ser	Tyr	Ala	Met
			325						330					335	
Gly	Val	Ala	Val	Val	Gln	Asn	Arg	Ala	Met	Gln	Gln	Tyr	Val	Thr	Gly
			340					345					350		
Arg	Ser	Tyr	Leu	Asp	Ile	Asp	Met	Phe	Gln	Leu	Gly	Gln	Ala	Val	Ala
		355					360					365			
Arg	Asp	Ala	Glu	Ala	Gln	Met	Ser	Ser	Thr	Leu	Glu	Asp	Glu	Leu	Gly
	370					375					380				
Val	Thr	His	Glu	Ala	Lys	Glu	Ser	Leu	Lys	Arg	His	Ile	Arg	Asn	Ile
385					390					395					400
Asn	Ser	Ser	Glu	Thr	Ser	Phe	His	Lys	Pro	Thr	Gly	Gly	Ser	Ala	Ile
			405						410					415	
Glu	Met	Ala	Ile	Asp	Glu	Glu	Pro	Glu	Gln	Phe	Glu	His	Arg	Ser	Asp
			420					425					430		
Gln	Glu	Arg	Asp	Gly	Glu	Pro	Gln	Ser	Ser	Ile	Ile	Gln	Tyr	Ala	Trp
		435					440					445			
Ala	Glu	Gly	Asn	Arg	Ser	Asp	Asp	Arg	Thr	Glu	Gln	Asp	Thr	Glu	Ser
	450					455					460				
Asp	Asn	Ile	Lys	Thr	Glu	Gln	Gln	Asn	Ile	Arg	Asp	Arg	Leu	Asn	Lys
465					470					475					480
Arg	Leu	Asn	Glu	Lys	Lys	Lys	Gln	Gly	Ser	Gln	Pro	Pro	Thr	Asn	Pro
			485						490					495	
Thr	Asn	Arg	Thr	Asn	Gln	Asp	Glu	Ile	Asp	Asp	Leu	Phe	Asn	Ala	Phe
			500					505					510		
Gly	Ser	Asn													
		515													

<210> 419

<211> 395

<212> PRT

<213> Human parainfluenza virus 2

<220>

<223> P protein of Human parainfluenza virus 2

<400> 419

Met	Ala	Glu	Glu	Pro	Thr	Tyr	Thr	Thr	Glu	Gln	Val	Asp	Glu	Leu	Ile
1				5					10					15	
His	Ala	Gly	Leu	Gly	Thr	Val	Asp	Phe	Phe	Leu	Ser	Arg	Pro	Ile	Asp
		20						25					30		
Ala	Gln	Ser	Ser	Leu	Gly	Lys	Gly	Ser	Ile	Pro	Pro	Gly	Val	Thr	Ala
		35					40					45			

Val	Leu	Thr	Ser	Ala	Ala	Glu	Thr	Lys	Ser	Lys	Pro	Val	Ala	Ala	Gly
50						55					60				
Pro	Val	Lys	Pro	Arg	Arg	Lys	Lys	Val	Ile	Ser	Asn	Thr	Thr	Pro	Tyr
65					70					75					80
Thr	Ile	Ala	Asp	Asn	Ile	Pro	Pro	Glu	Lys	Leu	Pro	Ile	Asn	Thr	Pro
				85					90					95	
Ile	Pro	Asn	Pro	Leu	Leu	Pro	Leu	Ala	Arg	Pro	His	Gly	Lys	Met	Thr
			100					105					110		
Asp	Ile	Asp	Ile	Val	Thr	Gly	Asn	Ile	Thr	Glu	Gly	Ser	Tyr	Lys	Gly
		115					120					125			
Val	Glu	Leu	Ala	Lys	Leu	Gly	Lys	Gln	Thr	Leu	Leu	Thr	Arg	Phe	Thr
	130					135					140				
Ser	Asn	Glu	Pro	Val	Ser	Ser	Ala	Gly	Ser	Ala	Gln	Asp	Pro	Asn	Phe
145					150					155					160
Lys	Arg	Gly	Gly	Glu	Leu	Ile	Glu	Lys	Glu	Gln	Glu	Ala	Thr	Ile	Gly
				165					170						175
Glu	Asn	Gly	Val	Leu	His	Gly	Ser	Glu	Ile	Arg	Ser	Lys	Ser	Ser	Ser
			180					185					190		
Gly	Val	Ile	Pro	Gly	Val	Pro	Gln	Ser	Arg	Pro	Gln	Leu	Ala	Ser	Ser
		195					200					205			
Pro	Ala	His	Ala	Asp	Pro	Ala	Pro	Ala	Ser	Ala	Glu	Asn	Val	Lys	Glu
		210				215					220				
Ile	Ile	Glu	Leu	Leu	Lys	Gly	Leu	Asp	Leu	Arg	Leu	Gln	Thr	Val	Glu
225					230					235					240
Gly	Lys	Val	Asp	Lys	Ile	Leu	Ala	Thr	Ser	Ala	Thr	Ile	Ile	Asn	Leu
				245					250					255	
Lys	Asn	Glu	Met	Thr	Ser	Leu	Lys	Ala	Ser	Val	Ala	Thr	Met	Glu	Gly
			260					265					270		
Met	Ile	Thr	Thr	Ile	Lys	Ile	Met	Asp	Pro	Ser	Thr	Pro	Thr	Asn	Val
		275					280						285		
Pro	Val	Glu	Glu	Ile	Arg	Lys	Ser	Leu	His	Asn	Val	Pro	Val	Val	Ile
		290				295					300				
Ala	Gly	Pro	Thr	Ser	Gly	Gly	Phe	Thr	Ala	Glu	Gln	Val	Ile	Leu	Ile
305					310					315					320
Ser	Met	Asp	Glu	Leu	Ala	Arg	Pro	Thr	Leu	Ser	Ser	Thr	Lys	Arg	Ile
				325					330					335	
Thr	Arg	Lys	Pro	Glu	Ser	Lys	Lys	Asp	Leu	Thr	Gly	Ile	Lys	Leu	Thr
			340					345					350		
Leu	Met	Gln	Leu	Ala	Asn	Asp	Cys	Ile	Ser	Arg	Pro	Asp	Thr	Lys	Thr
		355					360					365			
Glu	Phe	Val	Thr	Lys	Ile	Gln	Ala	Ala	Thr	Thr	Glu	Ser	Gln	Leu	Asn
	370					375					380				
Glu	Ile	Lys	Arg	Ser	Ile	Ile	Arg	Ser	Ala	Ile					
385					390					395					

<210> 420

<211> 539

<212> PRT

<213> Human parainfluenza virus

<220>

<223> F protein of Human parainfluenza virus

<400> 420

Met	Ser	Trp	Lys	Val	Val	Ile	Ile	Phe	Ser	Leu	Leu	Ile	Thr	Pro	Gln
1				5					10					15	
His	Gly	Leu	Lys	Glu	Ser	Tyr	Leu	Glu	Glu	Ser	Cys	Ser	Thr	Ile	Thr
			20					25					30		
Glu	Gly	Tyr	Leu	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Thr	Asn	Val	Phe
		35					40					45			

Thr	Leu	Glu	Val	Gly	Asp	Val	Glu	Asn	Leu	Thr	Cys	Ala	Asp	Gly	Pro
50						55					60				
Ser	Leu	Ile	Lys	Thr	Glu	Leu	Asp	Leu	Thr	Lys	Ser	Ala	Leu	Arg	Glu
65					70					75					80
Leu	Arg	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Arg	Glu	Glu	Gln	Ile	Glu
				85					90					95	
Asn	Pro	Arg	Gln	Ser	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val
			100					105					110		
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Val	Ala	Ile	Ala	Lys	Thr	Ile
		115					120					125			
Arg	Leu	Glu	Ser	Glu	Val	Thr	Ala	Ile	Lys	Asn	Ala	Leu	Lys	Lys	Thr
130						135				140					
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr
145					150					155					160
Ala	Val	Arg	Glu	Leu	Lys	Asp	Phe	Val	Ser	Lys	Asn	Leu	Thr	Arg	Ala
				165					170					175	
Ile	Asn	Lys	Asn	Lys	Cys	Asp	Ile	Ala	Asp	Leu	Lys	Met	Ala	Val	Ser
			180					185					190		
Phe	Ser	Gln	Phe	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser
	195						200					205			
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp
210						215					220				
Ala	Glu	Leu	Ala	Arg	Ala	Val	Ser	Asn	Met	Pro	Thr	Ser	Ala	Gly	Gln
225					230					235					240
Ile	Lys	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe
				245					250					255	
Gly	Phe	Leu	Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln
			260					265					270		
Leu	Pro	Ile	Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala
		275					280					285			
Ala	Pro	Ser	Cys	Ser	Gly	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg
290						295					300				
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr
305					310					315					320
Pro	Asn	Glu	Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp
				325					330					335	
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile
			340					345					350		
Asn	Ile	Ser	Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His
		355					360					365			
Pro	Ile	Ser	Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys
370						375					380				
Tyr	Lys	Gly	Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile
385					390					395					400
Lys	Gln	Leu	Asn	Lys	Gly	Cys	Ser	Tyr	Ile	Thr	Asn	Gln	Asp	Ala	Asp
				405					410					415	
Thr	Val	Thr	Ile	Asp	Asn	Thr	Val	Tyr	Gln	Leu	Ser	Lys	Val	Glu	Gly
			420					425					430		
Glu	Gln	His	Val	Ile	Lys	Gly	Arg	Pro	Val	Ser	Ser	Ser	Phe	Asp	Pro
		435					440					445			
Val	Lys	Phe	Pro	Glu	Asp	Gln	Phe	Asn	Val	Ala	Leu	Asp	Gln	Val	Phe
450						455					460				
Glu	Ser	Ile	Glu	Asn	Ser	Gln	Ala	Leu	Val	Asp	Gln	Ser	Asn	Arg	Ile
465					470					475					480
Leu	Ser	Ser	Ala	Glu	Lys	Gly	Asn	Thr	Gly	Phe	Ile	Ile	Val	Ile	Ile
				485					490					495	
Leu	Ile	Ala	Val	Leu	Gly	Ser	Thr	Met	Ile	Leu	Val	Ser	Val	Phe	Ile
			500					505					510		
Ile	Ile	Lys	Lys	Thr	Lys	Lys	Pro	Thr	Gly	Ala	Pro	Pro	Glu	Leu	Ser
		515					520					525			
Gly	Val	Thr	Asn	Asn	Gly	Phe	Ile	Pro	His	Asn					

<210> 421
 <211> 236
 <212> PRT
 <213> Human parainfluenza virus

<220>
 <223> G protein of Human parainfluenza virus

<400> 421
 Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asn Arg Pro Pro
 115 120 125
 Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr
 130 135 140
 Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Thr Ser Ser Arg Thr
 145 150 155 160
 His Ser Pro Pro Arg Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr
 165 170 175
 Leu Arg Thr Ser Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Val Gln
 180 185 190
 Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Glu Ala Ser Pro Ala
 195 200 205
 Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Ile Gln Arg Lys Ser Val
 210 215 220
 Glu Ala Asn Thr Ser Thr Thr Tyr Asn Gln Thr Ser
 225 230 235

<210> 422
 <211> 120
 <212> PRT
 <213> Homo sapiens

<400> 422
 Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
 1 5 10 15
 Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ala
 20 25 30
 Gly Met Ser Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
 35 40 45
 Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys His Tyr Asn Pro Ser
 50 55 60
 Leu Lys Asp Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65 70 75 80
 Val Leu Lys Val Thr Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Tyr

				85					90					95			
Cys	Ala	Arg	Asp	Met	Ile	Phe	Asn	Phe	Tyr	Phe	Asp	Val	Trp	Gly	Gln		
			100					105					110				
Gly	Thr	Thr	Val	Thr	Val	Ser	Ser										
			115				120										

<210> 423
 <211> 106
 <212> PRT
 <213> Homo sapiens

<400> 423

Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Thr	Leu	Ser	Ala	Ser	Val	Gly		
1				5					10					15			
Asp	Arg	Val	Thr	Ile	Thr	Cys	Ser	Ala	Ser	Ser	Arg	Val	Gly	Tyr	Met		
			20					25					30				
His	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	Tyr		
			35				40					45					
Asp	Thr	Leu	Leu	Leu	Asp	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	Ser		
	50				55					60							
Gly	Ser	Gly	Thr	Glu	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	Asp		
65				70					75					80			
Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Phe	Gln	Gly	Ser	Gly	Tyr	Pro	Phe	Thr		
			85					90					95				
Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile	Lys								
			100					105									

<210> 424
 <211> 532
 <212> PRT
 <213> Avian pneumovirus

<220>
 <223> Avian pneumovirus fusion protein gene

<400> 424

Met	Ser	Trp	Lys	Val	Val	Leu	Leu	Leu	Val	Leu	Leu	Ala	Thr	Pro	Thr		
1			5						10					15			
Gly	Gly	Leu	Glu	Glu	Ser	Tyr	Leu	Glu	Glu	Ser	Cys	Ser	Thr	Val	Thr		
			20					25					30				
Arg	Gly	Tyr	Leu	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Thr	Asn	Val	Phe		
			35				40					45					
Thr	Leu	Gly	Val	Gly	Asp	Val	Lys	Asn	Leu	Thr	Cys	Thr	Asp	Gly	Pro		
	50				55					60							
Ser	Leu	Ile	Arg	Thr	Glu	Leu	Glu	Leu	Thr	Lys	Asn	Ala	Leu	Glu	Glu		
65				70					75					80			
Leu	Lys	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Lys	Glu	Ala	Arg	Ile	Met		
			85				90						95				
Ser	Pro	Arg	Lys	Ala	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val		
			100				105					110					
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Val	Ala	Ile	Ala	Lys	Thr	Ile		
			115				120					125					
Arg	Leu	Glu	Gly	Glu	Val	Ala	Ala	Ile	Lys	Gly	Ala	Leu	Arg	Lys	Thr		
	130					135				140							
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr		
145				150					155					160			
Ala	Val	Asn	Asp	Leu	Lys	Asp	Phe	Ile	Ser	Lys	Lys	Leu	Thr	Pro	Ala		
			165				170						175				
Ile	Asn	Arg	Asn	Lys	Cys	Asp	Ile	Ser	Asp	Leu	Lys	Met	Ala	Val	Ser		

NY2: 1449616.1

Gly Val Asn Asn Lys Gly Phe Ile Pro
 530 535

<210> 426

<211> 538

<212> PRT

<213> Turkey rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus gene for fusion
 protein (F1 and F2 subunits), complete cds

<400> 426

Met	Asp	Val	Arg	Ile	Cys	Leu	Leu	Leu	Phe	Leu	Ile	Ser	Asn	Pro	Ser
1				5					10					15	
Ser	Cys	Ile	Gln	Glu	Thr	Tyr	Asn	Glu	Glu	Ser	Cys	Ser	Thr	Val	Thr
			20					25					30		
Arg	Gly	Tyr	Lys	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Thr	Asn	Val	Phe
			35				40					45			
Asn	Leu	Glu	Ile	Gly	Asn	Val	Glu	Asn	Ile	Thr	Cys	Asn	Asp	Gly	Pro
	50				55						60				
Ser	Leu	Ile	Asp	Thr	Glu	Leu	Val	Leu	Thr	Lys	Asn	Ala	Leu	Arg	Glu
65					70					75				80	
Leu	Lys	Thr	Val	Ser	Ala	Asp	Gln	Val	Ala	Lys	Glu	Ser	Arg	Leu	Ser
				85					90					95	
Ser	Pro	Arg	Arg	Arg	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val
			100					105					110		
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Val	Ala	Leu	Ala	Lys	Thr	Ile
			115				120					125			
Arg	Leu	Glu	Gly	Glu	Val	Lys	Ala	Ile	Lys	Asn	Ala	Leu	Arg	Asn	Thr
	130				135						140				
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr
145					150					155				160	
Ala	Val	Asn	Asp	Leu	Lys	Glu	Phe	Ile	Ser	Lys	Lys	Leu	Thr	Pro	Ala
				165					170					175	
Ile	Asn	Gln	Asn	Lys	Cys	Asn	Ile	Ala	Asp	Ile	Lys	Met	Ala	Ile	Ser
			180					185					190		
Phe	Gly	Gln	Asn	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser
		195				200						205			
Asp	Ser	Ala	Gly	Ile	Thr	Ser	Ala	Val	Ser	Leu	Asp	Leu	Met	Thr	Asp
	210					215					220				
Asp	Glu	Leu	Val	Arg	Ala	Ile	Asn	Arg	Met	Pro	Thr	Ser	Ser	Gly	Gln
225					230					235				240	
Ile	Ser	Leu	Met	Leu	Asn	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe
				245					250					255	
Gly	Ile	Leu	Ile	Gly	Val	Tyr	Asp	Gly	Thr	Val	Val	Tyr	Met	Val	Gln
			260					265					270		
Leu	Pro	Ile	Phe	Gly	Val	Ile	Glu	Thr	Pro	Cys	Trp	Arg	Val	Val	Ala
		275					280					285			
Ala	Pro	Leu	Cys	Arg	Lys	Glu	Lys	Gly	Asn	Tyr	Ala	Cys	Ile	Leu	Arg
	290					295					300				
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Thr	Asn	Ala	Gly	Ser	Thr	Ala	Tyr	Tyr
305					310					315				320	
Pro	Asn	Lys	Asp	Asp	Cys	Glu	Val	Arg	Asp	Asp	Tyr	Val	Phe	Cys	Asp
				325					330					335	
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Leu	Glu	Val	Glu	Gln	Cys	Asn	Tyr
			340					345					350		
Asn	Ile	Ser	Thr	Ser	Lys	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His
		355				360						365			
Pro	Val	Ser	Met	Val	Ala	Leu	Thr	Pro	Leu	Gly	Gly	Leu	Val	Ser	Cys
	370					375					380				

Tyr Glu Ser Val Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Gly Lys Gly Cys Thr His Ile Pro Asn Asn Glu Ala Asp
 405 410 415
 Thr Ile Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Val Gly
 420 425 430
 Glu Gln Arg Thr Ile Lys Gly Ala Pro Val Val Asn Asn Phe Asn Pro
 435 440 445
 Ile Leu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Asp Arg Ser Gln Asp Leu Ile Asp Lys Ser Asn Asp Leu
 465 470 475 480
 Leu Gly Ala Asp Ala Lys Ser Lys Ala Gly Ile Ala Ile Ala Ile Val
 485 490 495
 Val Leu Val Ile Leu Gly Ile Phe Phe Leu Leu Ala Val Ile Tyr Tyr
 500 505 510
 Cys Ser Arg Val Arg Lys Thr Lys Pro Lys His Asp Tyr Pro Ala Thr
 515 520 525
 Thr Gly His Ser Ser Met Ala Tyr Val Ser
 530 535

<210> 427
 <211> 537
 <212> PRT
 <213> Avian pneumovirus

<220>
 <223> Avian pneumovirus fusion glycoprotein (F) gene,
 complete cds

<400> 427
 Met Ser Trp Lys Val Val Leu Leu Leu Val Leu Leu Ala Thr Pro Thr
 1 5 10 15
 Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
 50 55 60
 Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met
 85 90 95
 Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala
 165 170 175
 Ile Asn Arg Asn Lys Cys Asp Ile Ser Asp Leu Lys Met Ala Val Ser
 180 185 190
 Phe Gly Gln Tyr Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Ala Glu Leu Val Arg Ala Val Ser Asn Met Pro Thr Ser Ser Gly Gln

225 230 235 240
 Ile Asn Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Val Tyr Ile Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Lys Val Lys Ala
 275 280 285
 Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu Glu Cys Asn Arg
 340 345 350
 Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380
 Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
 385 390 395 400
 Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser Asn Phe Asp Pro
 435 440 445
 Ile Glu Phe Pro Glu Asp Gln Phe Asn Ile Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln Ser Asn Lys Ile
 465 470 475 480
 Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val Ile Val Ile Val
 485 490 495
 Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val Gly Val Phe Phe
 500 505 510
 Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro Met Glu Met Asn
 515 520 525
 Gly Val Asn Asn Lys Gly Phe Ile Pro
 530 535

<210> 428

<211> 391

<212> PRT

<213> Turkey rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain CVL14/1)
 attachment protien (G) mRNA, complete cds

<400> 428

Met Gly Ser Lys Leu Tyr Met Ala Gln Gly Thr Ser Ala Tyr Gln Thr
 1 5 10 15
 Ala Val Gly Phe Trp Leu Asp Ile Gly Arg Arg Tyr Ile Leu Ala Ile
 20 25 30
 Val Leu Ser Ala Phe Gly Leu Thr Cys Thr Val Thr Ile Ala Leu Thr
 35 40 45
 Val Ser Val Ile Val Glu Gln Ser Val Leu Glu Glu Cys Arg Asn Tyr
 50 55 60
 Asn Gly Gly Asp Arg Asp Trp Trp Ser Thr Thr Gln Glu Gln Pro Thr
 65 70 75 80

Thr Ala Pro Ser Ala Thr Pro Ala Gly Asn Tyr Gly Gly Leu Gln Thr
 85 90 95
 Ala Arg Thr Arg Lys Ser Glu Ser Cys Leu His Val Gln Ile Ser Tyr
 100 105 110
 Gly Asp Met Tyr Ser Arg Ser Asp Thr Val Leu Gly Gly Phe Asp Cys
 115 120 125
 Met Gly Leu Leu Val Leu Cys Lys Ser Gly Pro Ile Cys Gln Arg Asp
 130 135 140
 Asn Gln Val Asp Pro Thr Ala Leu Cys His Cys Arg Val Asp Leu Ser
 145 150 155 160
 Ser Val Asp Cys Cys Lys Val Asn Lys Ile Ser Thr Asn Ser Ser Thr
 165 170 175
 Thr Ser Glu Pro Gln Lys Thr Asn Pro Ala Trp Pro Ser Gln Asp Asn
 180 185 190
 Thr Asp Ser Asp Pro Asn Pro Gln Gly Ile Thr Thr Ser Thr Ala Thr
 195 200 205
 Leu Leu Ser Thr Ser Leu Gly Leu Met Leu Thr Ser Lys Thr Gly Thr
 210 215 220
 His Lys Ser Gly Pro Pro Gln Ala Leu Pro Gly Ser Asn Thr Asn Gly
 225 230 235 240
 Lys Thr Thr Thr Asp Arg Glu Pro Gly Pro Thr Asn Gln Pro Asn Ser
 245 250 255
 Thr Thr Asn Gly Gln His Asn Lys His Thr Gln Arg Met Thr Pro Pro
 260 265 270
 Pro Ser His Asp Asn Thr Arg Thr Ile Leu Gln His Thr Thr Pro Trp
 275 280 285
 Glu Lys Thr Phe Ser Thr Tyr Lys Pro Thr His Ser Pro Thr Asn Glu
 290 295 300
 Ser Asp Gln Ser Leu Pro Thr Thr Gln Asn Ser Ile Asn Cys Glu His
 305 310 315 320
 Phe Asp Pro Gln Gly Lys Glu Lys Ile Cys Tyr Arg Val Gly Ser Tyr
 325 330 335
 Asn Ser Asn Ile Thr Lys Gln Cys Arg Ile Asp Val Pro Leu Cys Ser
 340 345 350
 Thr Tyr Ser Thr Val Cys Met Lys Thr Tyr Tyr Thr Glu Pro Phe Asn
 355 360 365
 Cys Trp Arg Arg Ile Trp Arg Cys Leu Cys Asp Asp Gly Val Gly Leu
 370 375 380
 Val Glu Trp Cys Cys Thr Ser
 385 390

<210> 429

<211> 414

<212> PRT

<213> rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain 6574)
attachment protein (G)

<400> 429

Met Gly Ser Glu Leu Tyr Ile Ile Glu Gly Val Ser Ser Ser Glu Ile
 1 5 10 15
 Val Leu Lys Gln Val Leu Arg Arg Ser Gln Lys Ile Leu Leu Gly Leu
 20 25 30
 Val Leu Ser Ala Leu Gly Leu Thr Leu Thr Ser Thr Ile Val Ile Ser
 35 40 45
 Ile Cys Ile Ser Val Glu Gln Val Lys Leu Arg Gln Cys Val Asp Thr
 50 55 60
 Tyr Trp Ala Glu Asn Gly Ser Leu His Pro Gly Gln Ser Thr Glu Asn
 65 70 75 80

Thr	Ser	Thr	Arg	Gly	Lys	Thr	Thr	Thr	Lys	Asp	Pro	Arg	Arg	Leu	Gln
				85					90					95	
Ala	Thr	Gly	Ala	Gly	Lys	Phe	Glu	Ser	Cys	Gly	Tyr	Val	Gln	Val	Val
			100					105					110		
Asp	Gly	Asp	Met	His	Asp	Arg	Ser	Tyr	Ala	Val	Leu	Gly	Gly	Val	Asp
		115					120					125			
Cys	Leu	Gly	Leu	Leu	Ala	Leu	Cys	Glu	Ser	Gly	Pro	Ile	Cys	Gln	Gly
	130					135					140				
Asp	Thr	Trp	Ser	Glu	Asp	Gly	Asn	Phe	Cys	Arg	Cys	Thr	Phe	Ser	Ser
145				150						155					160
His	Gly	Val	Ser	Cys	Cys	Lys	Lys	Pro	Lys	Ser	Lys	Ala	Thr	Thr	Ala
				165					170					175	
Gln	Arg	Asn	Ser	Lys	Pro	Ala	Asn	Ser	Lys	Ser	Thr	Pro	Pro	Val	His
		180						185					190		
Ser	Asp	Arg	Ala	Ser	Lys	Glu	His	Asn	Pro	Ser	Gln	Gly	Glu	Gln	Pro
	195						200				205				
Arg	Arg	Gly	Pro	Thr	Ser	Ser	Lys	Thr	Thr	Ile	Ala	Ser	Thr	Pro	Ser
	210					215					220				
Thr	Glu	Asp	Thr	Ala	Lys	Pro	Thr	Ile	Ser	Lys	Pro	Lys	Leu	Thr	Ile
225					230					235					240
Arg	Pro	Ser	Gln	Arg	Gly	Pro	Ser	Gly	Ser	Thr	Lys	Ala	Ala	Ser	Ser
			245					250						255	
Thr	Pro	Ser	His	Lys	Thr	Asn	Thr	Arg	Gly	Thr	Ser	Lys	Thr	Thr	Asp
			260					265					270		
Gln	Arg	Pro	Arg	Thr	Gly	Pro	Thr	Pro	Glu	Arg	Pro	Arg	Gln	Thr	His
	275						280					285			
Ser	Thr	Ala	Thr	Pro	Pro	Pro	Thr	Thr	Pro	Ile	His	Lys	Gly	Arg	Ala
	290					295					300				
Pro	Thr	Pro	Lys	Pro	Thr	Thr	Asp	Leu	Lys	Val	Asn	Pro	Arg	Glu	Gly
305				310						315					320
Ser	Thr	Ser	Pro	Thr	Ala	Ile	Gln	Lys	Asn	Pro	Thr	Thr	Gln	Ser	Asn
			325					330						335	
Leu	Val	Asp	Cys	Thr	Leu	Ser	Asp	Pro	Asp	Glu	Pro	Gln	Arg	Ile	Cys
			340					345					350		
Tyr	Gln	Val	Gly	Thr	Tyr	Asn	Pro	Ser	Gln	Ser	Gly	Thr	Cys	Asn	Ile
	355					360						365			
Glu	Val	Pro	Lys	Cys	Ser	Thr	Tyr	Gly	His	Ala	Cys	Met	Ala	Thr	Leu
	370					375					380				
Tyr	Asp	Thr	Pro	Phe	Asn	Cys	Trp	Arg	Arg	Thr	Arg	Arg	Cys	Ile	Cys
385				390						395					400
Asp	Ser	Gly	Gly	Glu	Leu	Ile	Glu	Trp	Cys	Cys	Thr	Ser	Gln		
				405				410							

<210> 430

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL1/00

<400> 430

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Thr	Ala	Ile	Lys	Asn	Ala	Leu
1				5					10					15	
Lys	Lys	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
			20					25					30		
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Asp	Phe	Val	Ser	Lys		
			35				40					45			

<210> 431

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL17/00

<400> 431

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Thr	Ala	Ile	Lys	Asn	Ala	Leu
1				5					10					15	
Lys	Thr	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
			20					25					30		
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Asp	Phe	Val	Ser	Lys		
			35				40					45			

<210> 432

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL1/99

<400> 432

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Asn	Ala	Ile	Lys	Gly	Ala	Leu
1				5					10					15	
Lys	Gln	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
			20					25					30		
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Glu	Phe	Val	Ser	Lys		
			35				40					45			

<210> 433

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL1/94

<400> 433

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Asn	Ala	Ile	Lys	Gly	Ala	Leu
1				5					10					15	
Lys	Thr	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
			20					25					30		
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Glu	Phe	Val	Ser	Lys		
			35				40					45			

<210> 434

<211> 29

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRB sequence of strain NL1/00

<400> 434

Asn	Val	Ala	Leu	Asp	Gln	Val	Phe	Glu	Ser	Ile	Glu	Asn	Ser	Gln	Ala
1				5				10						15	
Leu	Val	Asp	Gln	Ser	Asn	Arg	Ile	Leu	Ser	Ser	Ala	Glu			
			20				25								

<210> 435

<211> 29

<212> PRT
 <213> human metapneumovirus

 <220>
 <223> Postulated HRB sequence of strain NL17/00

 <400> 435
 Asn Val Ala Leu Asp Gln Val Phe Glu Asn Ile Glu Asn Ser Gln Ala
 1 5 10 15
 Leu Val Asp Gln Ser Asn Arg Ile Leu Ser Ser Ala Glu
 20 25

 <210> 436
 <211> 29
 <212> PRT
 <213> human metapneumovirus

 <220>
 <223> Postulated HRB sequence of strain NL1/99

 <400> 436
 Asn Val Ala Leu Asp Gln Val Phe Glu Ser Ile Glu Asn Ser Gln Ala
 1 5 10 15
 Leu Val Asp Gln Ser Asn Lys Ile Leu Asn Ser Ala Glu
 20 25

 <210> 437
 <211> 29
 <212> PRT
 <213> human metapneumovirus

 <220>
 <223> Postulated HRB sequence of strain NL1/94

 <400> 437
 Asn Val Ala Leu Asp Gln Val Phe Glu Ser Ile Glu Asn Ser Gln Ala
 1 5 10 15
 Leu Val Asp Gln Ser Asn Lys Ile Leu Asn Ser Ala Glu
 20 25